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THE BUSINESS MAN patiently and patriotically submitted throughout the war while the conduct of his business was taken from him through government control of raw materials, fuel, transportation, distribution, prices and capital. The war is ended and business and industry need free rein, not gradually but immediately.

Franklin D. Jones, counsellor-at-law at Washington, points out in an address to the American Academy of Political and Social Science of Philadelphia, that it is vitally to the interest of industry that competition, free, fair and unrestricted, be reestablished. "Just as the trade associations, through their war service committees," he says, "rendered invaluable service to the Government and their industries during the period of government control, so now they can become a great and constructive factor in the maintenance of competition."

He points out that one of the great faults of the trade association in the past was that it concerned itself largely with control of prices, curtailment of pro-

duction and division of territory, but that its action too often was dictated by desperation of its members over conditions which threatened the ruin of the industry. Mr. Jones declares it is beyond dispute that American industry must now direct its efforts toward securing the greatest possible efficiency in production and distribution because considerations of world competition as well as domestic conditions demand it.

The facing of mass competition in foreign trade, the fight of industrial interests of one nation against another must be met. Against these Mr. Jones insists that American industry must present a united front and that an association of associations in the United States such as the Hansabund of Germany and the Union of the Metallurgical and Mining Industries of France should be considered. "A similar organization in America founded on right principles and having behind it the unlimited resources and resourcefulness of American industries could become a great constructive force in national and international affairs," he says in conclusion. "In the absence of international regulation of international trade, it is a national necessity."

TO PROTECT AMERICAN RIGHTS IN MEXICO.

BECAUSE of the chaotic conditions that have existed in Mexico during the past eight years with such disastrous effect upon lives and property in that country, there has been organized in the United States the National Association for the Protection of American Rights in Mexico, with headquarters in New York City. Its purposes are to make a coordinated effort to prevent repetition of the gross injustices that have been committed in that country, and to assist in removing the causes of friction between the United States and Mexico.

Further development of Mexico's resources, with increased revenue to the Government, reestablishment of its credit, employment for its people, and an assured food supply are largely dependent upon the continued help of American capital and enterprise, neither of which will be available for this purpose until there is an effective, practical and friendly recognition by the Mexican Government of its obligation to protect American and other foreign rights.

To this end the Association will keep accurate records of conditions in Mexico, will collect data regarding foreign industries there and keep informed concerning all decrees, laws, and regulations affecting American rights, in order to be prepared at all times to take and prosecute vigorously such legitimate steps as may be necessary for their protection. A study of the situation from the historical, legal, and economic standpoints will also be made in order to furnish accurate information to the United States Government and to American industry.

Nation-wide membership is essential and hundreds of leading firms from coast to coast, including several rub-

ber companies, have joined. Active membership includes corporations, associations, partnerships or individuals who have active or inactive property or business interests in Mexico. All others in sympathy with the purposes of the association are eligible as associate members.

WORKS COMMITTEES AND THE LIKE.

THAT there is a revolution on in the labor world none will deny. That it is likely to be a peaceful one, at least in America, is also more than probable. The fact that except for strikes, warranted and otherwise, labor is getting what it asks for without violence is largely due to the broad views held by industrial leaders who for the past few years have in every way possible given to the workman comforts, privileges and care that a generation ago would have been deemed foolish and superfluous. In other words, the heads of companies besides their loyalty to their business are showing a friendship, a loyalty to labor that is as complete as it is sincere.

The response of the workman to this attitude is what will determine the future relations between employer and employes. If the worker cares nothing for his work, his company, his "boss"; if he is ever ready in fault-finding, in unfair demands; is suspicious; is indeed a slacker, the relation will be no better than before, indeed, will be worse.

Loyalty to the workman calls for loyalty from the workmen, and until it is shown there can be no real industrial progress.

A SOUND PLAN OF PATENT REFORM.

IT has often been asserted that the failure of Congress to provide adequate forces and facilities for granting patents that really protect is due to the fact that the situation has not been particularly brought to its attention. If that be true, something may perhaps be accomplished if the inventors, manufacturers, and others who have suffered under our present patent system will make known to their representatives in both branches of Congress that they approve the movement to remedy conditions which is being conducted by the Patent Committee of the National Research Council, and which has the endorsement of the Patent Office Society. The committee is composed of some of the leading inventors, scientists, engineers and patent attorneys of the country and its recommendations are entitled to full acceptance and general support.

The Patent Committee proposes the following program of four features believed to be of fundamental importance: (1) the establishment of a single Court of Patent Appeals to take over the appellate jurisdiction now lodged in the nine independent Circuit Courts of

Appeal; (2) the establishment of the Patent Office as a separate institution independent of the Department of the Interior; (3) an increase in the personnel of the Patent Office to enable it to render prompt and efficient service and an increase in the salaries to approximate those paid in outside patent work, so that qualified examiners may be kept in the public service; (4) a change in the law relating to damages in infringement suits to answer one of the most common and strongest reproaches against the patent system, namely, that a patent does not ordinarily pay the inventor any money.

Apparently the passage of this legislation would go a long way toward eliminating the evils of our patent system, tending to facilitate prompt determination of patent rights and to avoid unnecessary litigation. Patentees of rubber articles, processes, and machinery have frequently resorted to the courts at great expense to protect their rights and will doubtless be numbered among the staunch supporters of the proposed legislation.

A MASSACHUSETTS MANDATORY.

A BILL that will doubtless be passed by the Legislature of Massachusetts points the way toward Americanization in a manner wholly wise and most comprehensive. It relates to the employment of persons unable to speak or write English in the factories and larger mercantile houses. It provides that after January 1, 1921, such persons between the ages of 21 and 40, whose education does not equal the fourth grade in the grammar school shall not be permitted in any place where more than 25 persons are employed. There is the further provision that three hours a week of schooling for at least 40 weeks in the year in approved schools, shall make such persons eligible for employment. Other states please copy.

EXPANSION OF BUSINESS.

TO STIMULATE investment of private capital in foreign securities in order to cut down government loans to allied countries as soon as possible the United States Government is preparing to furnish investors with information concerning the stability of foreign corporations and their stocks and bonds. The movement is designed to give an impetus to our foreign commerce as well as to help other countries and as such is worthy of commendation. Information concerning credit conditions in other countries will be placed at the disposal of prospective purchasers of foreign securities by the Department of Commerce at Washington. Business men desirous of expanding their business will do well to take advantage of this opportunity.



SEA VIEW GOLF CLUB, ABSECON, NEW JERSEY.

Summer Outing of The Rubber Association of America.

GODFELLOWSHIP reigned supreme, business was forgotten and competitors affiliated, when 300 or more members of the rubber industry gathered for a day's sport and recreation at the Summer outing of The Rubber Association of America, Inc., that was held at Sea View Golf Club, Absecon, New Jersey, Tuesday, June 24, 1919.

It was 1916 when the last outing was held. While our nation was plunged in warfare there was neither the time nor the inclination for such recreation, but with the armistice in force and the treaty which will insure peace to be signed in a few days at the most, the return to the good old custom seemed proper, and a goodly renaissance it was. New York rubber men were out in force. So were Trenton and Philadelphia. New England was well represented, and so were Akron, Cleveland and the Middle West. The day was perfect,

the sky almost cloudless, and the salt sea breeze tempered the sun's fervid heat.

The Sea View Golf Club House is an imposing structure, ideal in many respects. It has all the appurtenances of a first-class country club, and then some. There are golf-links, shooting-grounds,

tennis courts and ball field, also a swimming pool, and all these were reserved for the guests and were well utilized.

The New York contingent, reinforced with detachments from New England, embarked from the Pennsylvania Station on a special train of

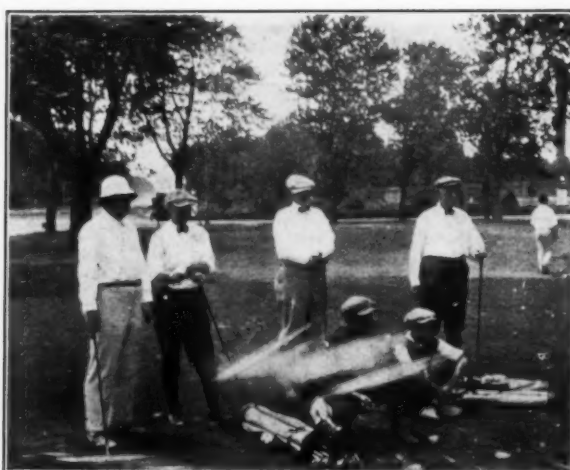
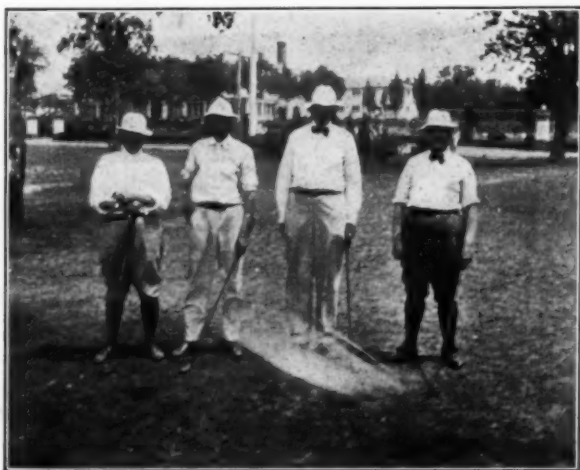
Pullmans, and at Newark and Trenton large representations were added. Arriving at Absecon about 11 o'clock, automobiles and busses conveyed the company to the club-house, where luncheon was served. Then the company separated into groups, each to participate in sports in which he was interested,



INDUSTRIES.

THE TWO BALL TEAMS.

IMPORTERS.



GOLF FOURSOMES.

G. E. HALL, H. C. PEARSON, G. B. HODGMAN, F. H. JONES.

H. B. TUBIN, A. B. CORNELL, C. E. STOKES, E. B. FULPER.

and so the afternoon was spent, in tennis, base-ball, golf, trap-shooting, swimming, etc.

A surprise of the day was the arrival of a Curtiss biplane, which, after doing a variety of stunts over the field in front of the clubhouse, alighted there, and was immediately surrounded by a curious crowd, anxious to get a near view of the air conqueror. Then it was discovered that H. H. Durr, president of the Victor Rubber Co., Springfield, Ohio, had taken this novel means of reaching the club grounds. He was hailed with enthusiastic cheers. Edward L. Bullock thought he would like to take a little flight in the azure, and when he had taken the trip, been tipped on end at the sharp turns, and upside down in the loop-the-loops, and came down safely and enthusiastic, a dozen others followed his lead, much to the monetary emolument of the owners and pilots of the machine. Without an exception, these 12 or 15 men were loud in praise of the trip. It was late in the afternoon when the sports were finished. In fact, the day was hardly long enough for the elaborate program of the sports committee.



THE PRIZE MARKSMEN.

League, and a nine chosen from the rubber importers and dealers. Five innings were played, with here and there a brilliant play, even though the field was under a somewhat grilling sun. The umpire, Jack Klinow, formerly with the New York "Yankees," judged with the utmost fairness, and no rebellion followed any of his decisions. The score was: Industries, 6; Importers, 3.

TENNIS.

Singles. The first prize was won by S. H. Johnson, and the second prize by T. R. Shepard, both of New York City.

Doubles. The winning team of doubles was David Kubie and Roger Hardy, both of New York City.

THE BANQUET.

And then the banquet. The big glassed-in piazza was filled

with tables set for 4, 6, 8, 10 or 20 people, and without ceremony of any sort the viands were served, and with appetites whetted by the salt sea-air the company did full justice to all set before them.



THE TENNIS COURT.

Although the recently elected president, Homer E. Sawyer, and the new manager-secretary, A. L. Viles, who takes office July 1, were present, there were no speeches, and the only formality was the award of prizes by F. R. Henderson, chairman of the Sports Committee. The prizes were mostly of silver, and com-



ARRIVAL OF THE AIRPLANE.

prised cups, humidors, table sets, and a fine revolver. The successful winners were as follows:

GOLF.

First prize, low gross, Horace Cook, Trenton, New Jersey.

Second prize, low gross, John W. Herron, Akron, Ohio.

First prize, low net, E. H. Sprague, Omaha, Nebraska.

Second prize, low net, Walter Bass, Akron, Ohio.

The Inter-City contest for the Trophy Cup presented by the Trenton Rubber Manufacturers' Association, which must be won



MEMBERS AND GUESTS OF THE RUBBER ASSOCIATION OF AMERICA, INC.

three times to become the permanent property of the territorial division was won this year by Akron, with a score of 314, New York scoring 319, Trenton 320, and Boston 322. This cup was won first by Trenton, second by New York, and now by Akron, and Chairman Henderson stated that it was Boston's turn next to win.

The banquet ended as it had begun, informally and soon the guests were being transported to the station where a special train, started at 9:40 for New York City, carrying most of the party,

though quite a number decided to remain over night at the Club House, or to go to Atlantic City.

That the affair was a perfect success was due to the efficient work of the committee in charge of F. R. Henderson, L. P. MacMichael and A. A. Garthwaite. The sub-committees were: B. W. Henderson, trap-shooting; H. W. French, tennis; and J. W. Herron, golf. All of these gentlemen devoted their entire day to catering to the enjoyment of the members, and strenuously earned the thanks accorded them.

Activities of The Rubber Association of America, Inc.

REGULATIONS ON RUBBER CEMENT EXPRESS SHIPMENTS MODIFIED.

THROUGH THE EFFORTS of the Traffic Division, an order has been promulgated by the Interstate Commerce Commission, effective July 10, 1919, which will permit liquid cements, including leather cement, roofing cement, rubber cement, and liquid cement not otherwise specified, to be transported by express in containers of a capacity not greater than five gallons when the flash point of the liquid is below 80 degrees F. and above 20 degrees F. The present regulation limiting the maximum quantity in one outer container to not exceeding one gallon when the flash point is below 20 degrees F. is still to be enforced.

SUPPLEMENTAL FEDERAL EXCISE TAX RULINGS ON MANUFACTURERS' SALES OF TIRES, INNER TUBES, PARTS, AND ACCESSORIES.

The form of certificate embodied in Treasury Decision 2852 (approved May 31, 1919) has been amended to read as follows:

FORM OF CERTIFICATE.

The undersigned hereby certifies that the tires, inner tubes, parts, or accessories purchased hereunder are purchased with the intention of using them in the manufacture or production of new automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories, or for the sale on new automobile trucks, automobile wagons, other automobiles or motorcycles, or in connection therewith or with the sale thereof, or for free replacement under contract or guaranty. In case all of the tires, inner tubes, parts or accessories sold hereunder are diverted from this use, the purchaser will account for such tires, inner tubes or accessories to _____, the manufacturer thereof, at least once during each calendar year and will pay the tax to him at the time such accounting is made.

(Signed) _____

PROOF OF EXPORTATION.

The Treasury Department has officially approved the form of proof of exportation marked Exhibit A, to meet the requirements of Article 43 of Regulations No. 47. The form marked Exhibit B is suggested for general use, as it may be used either

(a) where the manufacturer himself is the exporter or (b) where the exporter is a direct purchaser from the manufacturer. These forms may be obtained from the secretary of the Rubber Association.

PRESIDENT WILSON ADVOCATES REPEAL OF FEDERAL EXCISE TAXES ON SALES OF TIRES, INNER TUBES, PARTS AND ACCESSORIES AND OTHER EXCISE TAXES.

The following is quoted from President Wilson's message to Congress on Tuesday, May 20, 1919, in which he apparently advocates the repeal of the excise taxes on sales of tires, inner tubes, parts and accessories as well as the other excise taxes contained in Title IX of the Revenue Act of 1918:

The main thing we shall have to care for is that our taxation shall rest as lightly as possible on the productive resources of the country, that its rates shall be staple, and that it shall be constant in its revenue-yielding power. We have found the main sources from which it must be drawn.

* * *

Many of the minor taxes provided for in the revenue legislation of 1917 and 1918, though no doubt made necessary by the pressing necessities of the war time, can hardly find sufficient justification under the easier circumstances of peace, and can now happily be got rid of. Among these, I hope you will agree, are the excises upon various manufacturers and the taxes upon retail sales. They are unequal in the incidence on different industries and on different individuals. Their collection is difficult and expensive. Those which are levied upon articles sold at retail are largely evaded by the readjustment of retail prices.

With the end of the world conflict every effort should be made to bring business back to normal conditions. The release of all industries from burdensome taxes, especially when they are of a discriminatory character, should be one of the first steps in that direction.

The taxes on the sales of tires, inner tubes, parts and accessories, are of a most discriminatory character, and add greatly to the burden of the manufacturer. The tax for which the manufacturer is liable presents many almost insurmountable difficulties in accounting, and in many cases it is almost impossible to comply with the regulations of the Treasury Department. If such regulations are not strictly observed, it is probable that many



AT THE SUMMER OUTING AT ABSECON, NEW JERSEY, JUNE 24, 1919.

manufacturers will be called upon to pay a much greater amount of tax than they have reimbursed themselves for. Strict compliance with the regulations would in a great many cases necessitate a considerable increase in the clerical staff of the manufacturer and would require the assembling of a mass of records, the checking of which would probably involve care and time out of all proportion with the amount of tax collected.

The Federal Excise Tax Committee will soon arrange for a meeting of those interested, with a view to making a proper presentation to the members of Congress. In the meantime, everyone interested in the measure should write now to his Congressman and to his Senators, telling of his experience with these taxes, the difficulty of handling them properly and requesting that they be removed as soon as possible.

FIRM MEMBERS ASKED TO VOTE ON REMEDIAL RAILROAD LEGISLATION.

The Board of Directors has supplied all firm members with a copy of Referendum No. 28 of the Chamber of Commerce of the U. S. A. on the Report of the Committee on Railroads on Remedial Railroad Legislation.

This referendum contains recommendations pertaining to (1) corporate ownership and operation, (2) corporate operation, (3) adherence to the period of federal control, (4) consolidation in a limited number of strong competing systems, (5) railroad companies engaged in interstate commerce, (6) federal regulation of capital expenditures and security issues of railroads engaged in interstate commerce, (7) federal regulation of interstate rates, (8) rates in each traffic section, (9) fund for strengthening general railroad credit, (10) federal transportation board.

As it is of immediate importance that an expression of the opinion of the best business minds of the country be obtained regarding these subjects, firm members are requested to register their opinion with regard to the several questions asked in the following ballot and return to the secretary of The Rubber Association not later than July 15, 1919:

BALLOT.

- I. The committee recommends adherence to the policy of corporate ownership and operation, with comprehensive regulation.
In favor.
Opposed.
- II. The committee recommends return of roads to corporate operation as soon as remedial legislation can be enacted.
In favor.
Opposed.
- III. The committee recommends adherence to the period of federal control as now fixed unless and until impossibility of remedial legislation in this period clearly appears.
In favor.
Opposed.
- IV. The committee recommends permission for consolidation in the public interest, with prior approval by government authority, in a limited number of strong competing systems.
In favor.
Opposed.
- V. The committee recommends a requirement that railroad companies engaging in interstate commerce become federal corporations, with rights of taxation and police regulation reserved for States.
In favor.
Opposed.
- VI. The committee recommends exclusive federal regulation of capital expenditures and security issues of railroads engaged in interstate commerce, with provision for notice and hearing for State authorities.
In favor.
Opposed.
- VII. The committee recommends federal regulation of intrastate rates affecting interstate commerce.
In favor.
Opposed.
- VIII. The committee recommends a statutory rule providing that rates in each traffic section shall yield an adequate return on a fair value of the property as determined by public authority.
In favor.
Opposed.
- IX. The committee recommends payment into a fund of a share of the excess earned by any railroad system under application of the above statutory rule over an equitable minimum return upon fair value of property, this fund to be

used as Congress directs for strengthening general railroad credit and increasing general railroad efficiency.

In favor.
Opposed.

- X. The committee recommends a federal transportation board to promote development of a national system of rail, water, and highway transportation and articulation of all transportation facilities.

In favor.
Opposed.

.....
Signature of Firm Representative.

SEATTLE WHARFAGE CHARGES TO BE REDUCED.

The difficulties encountered in weighing and sampling crude rubber imports at Seattle, Washington, are being investigated by the Traffic Committee. It is expected that satisfactory arrangements will be worked out in the near future, both in connection with the weighing and sampling by local weighing companies at Seattle and in connection with the absorption of handling charges by steamship companies and railroad companies jointly which will result in the owner of the freight paying only the legal wharfage charge of 25 cents per ton, which is covered by the tariff.

SECRETARY VORHIS RESIGNS.

H. S. Vorhis, for several years secretary and treasurer of The Rubber Association, has resigned to enter other business, and A. L. Viles, formerly manager of the Traffic Division, has been elected general manager and secretary of the Association. An officer of the Guaranty Trust Co. will act as treasurer. These changes become effective July 1, 1919.

SCRAP RUBBER DIVISION MEETING.

The Scrap Rubber Division of the National Association of Waste Material Dealers held a meeting at the Hotel Astor, New York City, June 17, 1919, Herman Muehlstein, the new chairman of the Scrap Rubber Division, presiding.

Mr. Cummings, for the classification committee, reported in reference to a conference which had been held with a committee from the Rubber Reclaimers Division of the Rubber Association of America in connection with the proposed changes in the scrap rubber circular and the advisability of adopting certain trade customs.

One of the suggestions which had been made to the Rubber Reclaimers was that they eliminate that clause under "Rejections," which provided that a reclaimer could charge one-half cent per pound for handling rejected material. It has been the contention of the Scrap Rubber Division of the Association that such a charge was exorbitant in cases where the material was not sorted or rebaled. The reclaimers have consented to change their paragraph covering rejections to read as follows:

"D' REJECTIONS: Upon his request all rejections shall be returnable to the seller within thirty days from the time notice of rejection is received by him and upon payment by him of one-half cent per pound to cover cost of sorting and rebaling or if not assorted, the actual cost of handling, not to exceed one-half cent per pound. If shipping instructions are not furnished within the above-mentioned thirty days, the purchaser shall be at liberty to make such disposition of the material as he may see fit. The above does not apply if rejected material is purchased by the mill."

Another concession made by the rubber reclaimers was to insert under "Claims" as a trade custom the following:

(A) All claims, including claims for overtare, shall be reported promptly in writing, and in no event, later than thirty days from arrival of goods at consumer's station.

(B) Claims for short weight shall be reported within ten days from date of arrival at consumer's mill.

A few other suggested changes are to be made by the Rubber Reclaimers Division, while the Scrap Rubber Division of this association voted in favor of making several changes, all of which will be embodied in the new circular to be issued within the next week or ten days.

Echoes of The Great War.

BRITISH IMPORT RESTRICTIONS MODIFIED.

THE WAR TRADE BOARD announces for the information of exporters in the United States that the following changes of interest to the rubber and allied industries have been made in the import restrictions of Great Britain.

All restrictions have been removed affecting asphaltum, earth colors, earth sienna, bone black, burnt sienna, carbon black, ochre and umber.

Litharge, ultramarine, blue white lead, lamp black and reclaimed rubber will be licensed for import only exceptionally when required.

Toys and games (other than electric toys), including parts thereof, are to be admitted at the rate of 20 per cent of the 1913 importations.

The following articles are to be rationed for importation as specified:

Rubber faced hand dating and numbering stamps to be admitted at the rate of 33 1/3 per cent of the 1916 imports.

Rubber bands for stationery purposes to be admitted at the rate of 75 per cent of the 1916 imports in proportionate quarterly amounts.

Fountain pens containing no gold to be admitted at the present rate of 24 tons per annum distributed among importers.

Insulating cloths and tapes to be admitted at the rate of 25 per cent of the 1913 imports.

CITATIONS FOR TAKING BACK EMPLOYEES.

Employers who give assurance that they will gladly take back their former employees who have served in the armed forces of the United States are entitled to receive a citation issued by the War and Navy Departments. On its receipt they are authorized to place the United States shield as a symbol of this upon the red border of their service flags, provided no names of individuals or business firms appear upon the flags. The shield should be placed at the top when a flag hangs downward, as in a window; otherwise on the border nearest the mast.

Applications for citations should be addressed to Colonel Arthur Woods, chairman of the Emergency Employment Committee for Soldiers and Sailors, United States Council of National Defense, Washington, D. C.

VOCATIONAL TRAINING FOR DISABLED SOLDIERS AND SAILORS.

To meet its obligation to reestablish disabled soldiers, sailors and marines in civil life, the Government has authorized the Federal Board for Vocational Education and Congress has made an appropriation for its maintenance under the direction of Colonel Arthur Woods, assistant to the Secretary of War. Every man who has been in the United States service, whether at home or abroad, and who is considered by the Bureau of War Risk Insurance to be as much as 10 per cent disabled is entitled to be placed in an educational institution at government expense. A disabled man so incapacitated that he cannot take up his old occupation will be taught another in order that he may become self-supporting. He may choose any occupation or trade which he thinks he would like to follow, subject to the approval of the Federal Board. This applies to demobilized men as well as those still in service, and the Federal Board is making every possible effort to get in touch with all men who were discharged before it began to function. Meanwhile such men as wish to avail themselves of this opportunity should make application to the nearest of the fourteen district offices of the Federal Board for Vocational Education, which are located in Boston, New York, Philadelphia, Washington, Atlanta, New Orleans, Cincinnati, Chicago, St. Louis, Minneapolis, Denver, San Francisco, Seattle and Dallas.

While in training a man receives an amount equal at least to the base pay received during his last month's service in the Army, Navy or Marine Corps, but in no case does he receive less than \$65 per month if a single man, less than \$75 per month if living with his dependents, nor less than \$65 per month for himself if living apart from his dependents—in addition to allowances to his dependents if married and living apart from his wife during the period of training. In all cases the wife receives \$15, and each minor child \$10 per month. Men who have been blinded in battle or who have lost both arms or both legs, or who as a result of injuries incurred are permanently and totally disabled, it may be noted, come under a special provision which allows them \$100 per month additional.

THRIFTY WORKERS CUT DOWN PRODUCTION COSTS.

Every business concern to-day faces the problem of cutting down production costs. If the thought "Save!" can be brought home to every employe every day for one year, it should be possible to reduce expenses through economy in material and time, moreover, personal thrift would also be encouraged and the savings would be invested in War Savings Stamps.

Numerous ways to launch a thrift campaign in any business organization have been suggested.

First, in each pay envelope enclose a blank bearing two questions, to be answered by every employe: 1. What can and will you do to cut down the operating expense of the company? 2. What ways can you suggest by which others can cut down expenses?

Second, enclose a blank for stating weekly how the employe was able to cut down operating expenses by some short cut to the saving of material and time.

Pay envelopes and house organs should contain practical economy talks by department heads, showing ways of saving, and articles should also be published telling what individuals have done along this line.

In every work-room, stock-room, sales-room, department and branch, posters should be put up making definite appeals for economy of various costs, and these should be frequently changed.

Personal letters should be written by executives or department heads, commending every employe who has done anything worth while in the saving line, to let him or her know that such effort is appreciated.

Monthly results of saving in figures should be compiled and published.

Wherever savings can be put into figures—reduced costs, increased profits and actual money—the savings should be shared with employes in the form of prizes or bonuses.

THRIFT AND SAVINGS STAMPS TO CONTINUE.

War has taught the country some wholesome lessons in thrift worthy of being perpetuated, for the peace-time needs of the country, especially during the reconstruction period, are very great and should inspire further effort. In order that the habits of saving and the intelligent use of money may become one of the lasting national activities of the American people, and particularly that a safe method of investment may be afforded, the Treasury Department is continuing the sale of Savings and Thrift Stamps. Churches, fraternal and social organizations, commercial associations and business houses, are keeping the benefits of thrift before their membership or employes by the continuation or organization of thrift clubs and savings societies. Many rubber companies are interested because the movement means better citizens, better communities, and a better country.

GERMANY FEARS AMERICAN TRADE PREJUDICE.

Germany's prospects of resuming commercial relations with the United States are dealt with in a statement which the German paper, "Der Konfektionär," attributes to Arthur Dunning, general secretary of the American Chamber of Commerce in Berlin, who is quoted as saying that while business relations cannot be resumed as long as the Trading with the Enemy Act remains in force, the time has come to make preparations for future trade. He believes the best foundations exist for the resumption of business relations, as German warehouses are empty and the credit of the hard-working German business man stands high. American commissions, he points out, are visiting Holland, Denmark and Scandinavia to examine into the opportunities for American export, and similar commissions and trade experts will enter Germany immediately after the conclusion of a preliminary peace and the raising of the blockade. Probably two or three years will have to elapse before the anti-German feeling still prevailing among the masses of the American people will be transformed into a mutual understanding and cooperation. Meanwhile, German industries will hardly be strong enough to supply foreign markets to any large extent, and as extraordinary difficulties will be thrown in the way of permits to enter America during the next few years, German business men will do well to allow their business to be conducted by the American Chambers of Commerce and other official channels shortly to be organized for this purpose.

COMMUNITY TO BENEFIT BY WAR FUNDS.

At the close of its war work, the War Service Union, Jeannette, Pennsylvania, of which Seneca G. Lewis of the Pennsylvania Rubber Co. is president, had \$15,000 on hand, while the Chamber of Commerce had \$10,000. It was decided to use the money for the erection of a combined municipal and community building, containing an auditorium, reading rooms, gymnasium, swimming pool, etc. This will provide a town club of which every resident of Jeannette is to be considered a member.

HISTORY OF RUBBER PRICES DURING THE WAR.

A history of prices during the war, and covering the period from the beginning of 1913 to the end of 1918, is being published by the Price Section of the War Industries Board. It will consist of 57 bulletins which are now in press and will be issued piecemeal as rapidly as possible. The first seven are of general character and will be followed by 50 bulletins, each devoted to a single important branch of industry. Bulletin No. 30 will deal with rubber and rubber products. The history has been prepared for the information of business men and may be had on application.

AMERICAN OFFICERS IMPROVE SPARE TIME IN FRANCE.

The following letter from a former employe of The B. F. Goodrich Co., Akron, Ohio, now a lieutenant in the American Expeditionary Forces, still in France, which has been received by F. W. Jones, manager of clothing sales.

NANTES, FRANCE.

DEAR "CHIEF":

I was pleased to find your letter of April 14 on my desk when I returned from a week's trip—partly business and pleasure—to Paris, Château-Thierry, Reims, Argonne, Meuse Sector and Verdun. For the past month I have been very busy here, as we emptied and filled the embarkation area several times. At present the 79th Division is here.

My trip up along the old front with Captain Bliss, my Washington friend, was a wonder. We explored miles of trenches, dug-outs, No man's Land, forts, etc. There are still a number of unburied German and French dead; it was a common occurrence to pick up a boot with a leg or foot left in it. Our own American boys have all been well taken care of and laid to rest in well-kept cemeteries—thanks to our Graves Regiment Service. Verdun (which the French consider the Waterloo of this war) is certainly a great military stronghold with its sur-

rounding forts. The citadel, or underground fort in Verdun itself is capable of holding 40,000 troops and is a complete military camp—hospital, bakeries, etc.

My leave to visit points in Italy was granted for May 5, but since the break at the Peace Conference, Italy has been closed as a leave area for the A. E. F. I think the Captain and I will substitute an extended trip through France, visiting Lyons, Marseilles, Nice, Monte Carlo, Mentone, Nimes, and down into the Pyrenees mountains and Spanish border to Pau, Bayonne and Biarritz. We shall probably be able to get over into Italy by automobile for a day or so, but Spain being neutral, about one foot will be all we can get over the line there.

I am hoping to sail in July if possible. We have lost our colonel here, so I am not sure just what to expect from the present Commanding Officer. Our old colonel was certainly a regular fellow. My brother sailed on the 19th—S. S. *Mercury*, and is in the United States by now, I think. He is very fortunate, as he can be in business by June 1, O. K. I should like to be back by that time, but it is doubtful if I return before August 1. I'll not mind it so much if I succeed in getting to London and into Scotland and Ireland before I return. I am rather disappointed regarding my Italian trip, because I wanted to see Venice and Rome and Mt. Vesuvius.

Conflicting reports continue to reach us over here regarding business conditions. I am enclosing a couple of clippings from Syracuse papers which seem to look good for central New York as a patriotic commercial center. I am very proud of my home city.

Before returning home I expect to see France become sensible and open the door so the much-needed American products can play the part they should in the early reconstruction work. The French work in a peculiar way; instead of returning to their ruined homes or business places and blasting out and rebuilding anew, as we would do, they come back, select one room that has met with the least disaster, roof and wall it up with tar paper, etc. They start in part by part to clean up and rebuild over the parts still standing.

Cordially yours,

TIP GOES.

FAIR AT BRUSSELS TO END WAR ABUSES.

The municipal government of Brussels will hold a commercial fair in September, with the object of putting an end to the abuses brought about by the war, lowering the prices of foodstuffs, and bringing about normal conditions, at the same time attracting world trade in competition with German fairs. This fair will offer the manufacturers and producers of allied and neutral countries an opportunity of meeting and coming into direct contact with the buyers.

Only a moderate charge will be made for space sufficient, it is hoped, to meet expenses, and preference will probably be given to Belgian exhibitors, in consideration of the condition of the commerce and industry of that country at present. The Belgian people look forward to this fair being even more successful than those held during the war at Lyons, Basel, and Utrecht.

RUBBER EXPORTS AND IMPORTS FOR MADAGASCAR.

Madagascar, French East Africa, and its dependencies exported only 70,547 pounds of crude rubber, value 127,468 francs, during 1917, as compared with 220,460 pounds, value 348,530 francs, during 1916. During 1917 it also imported from America only 947,978 pounds of rubber goods, value 1,451 francs, as compared with 1,082,458 pounds in 1916, value 1,784 francs. The extension of American trade with Madagascar has been greatly hampered because of lack of transportation facilities.

DON'T WAIT TO GET THAT LARGE SUM FOR INVESTMENT. PUT ALL the little bits in Thrift Stamps and War Savings Stamps and you will soon have a large sum invested.

Alien Enemy Patents Available Under License.

THE ALIEN ENEMY-OWNED UNITED STATES PATENTS relating to chemical and allied industries which were seized under authority of presidential proclamation by the Alien Property Custodian have been sold to three American companies, The Chemical Foundation, Inc., Grasselli Chemical Co., and Bayer, Inc.

The patents controlled by the Bayer company relate to pharmaceuticals, while those held by the Chemical Foundation and by the Grasselli company relate to industrial processes and products. Such of these patents as are of interest to rubber manufacturers are enumerated in the following lists, which were compiled from that of the Chemical Foundation supplemented from the files of THE INDIA RUBBER WORLD.

All persons desiring to manufacture under any of these patents may now secure licenses permitting them to do so by application to the respective controlling companies.¹

PATENTS OWNED BY THE CHEMICAL FOUNDATION, INC.

Patent No.	Date.	Title.
Re-13,667.	Dec. 30, 1913.	Process of manufacturing vulcanized froth.
708,823.	Sept. 9, 1902.	Process of preparing and treating rubber-coated materials.
715,462.	Dec. 9, 1902.	Method of manufacturing molded elastic goods.
715,837.	Dec. 16, 1902.	Comb.
716,099.	Dec. 16, 1902.	Tire for motor vehicles.
725,890.	Apr. 21, 1903.	Process of making camphene.
737,745.	Sept. 1, 1903.	Felloe for vehicle wheels.
744,574.	Nov. 17, 1903.	Protecting mantle for cycle or air tubes.
757,831.	Apr. 19, 1904.	Floor or like brush.
757,907.	Apr. 19, 1904.	Tooth brush with washing device.
758,063.	Apr. 26, 1904.	Brush.
763,489.	June 28, 1904.	Inflatable boot.
765,290.	July 19, 1904.	Tire cover of undressed leather.
777,314.	Dec. 13, 1904.	Fastening for massive tires.
775,567.	Jan. 10, 1905.	Reservoir attachment for pens.
780,209.	Jan. 17, 1905.	Fastenings for wheel tires.
783,466.	Feb. 28, 1905.	Artificial limb.
786,527.	Apr. 4, 1905.	Manufacture of a substitute for caoutchouc.
787,473.	Apr. 18, 1905.	Air cushion.
787,473.	Apr. 18, 1905.	Tire.
788,990.	May 2, 1905.	Elastic stocking.
803,927.	Nov. 7, 1905.	Fountain pen.
804,218.	Nov. 14, 1905.	Gymnastic apparatus.
804,226.	Nov. 14, 1905.	Horseshoe (with elastic bottom plate).
804,272.	Nov. 14, 1905.	Respirator.
805,503.	Nov. 28, 1905.	Vulcanizing hard-rubber articles having interior cavities.
805,851.	Nov. 28, 1905.	Medicinal injector.
811,109.	Jan. 30, 1906.	Pneumatic tire.
818,771.	Jan. 24, 1906.	Tire for wheels.
821,394.	May 22, 1906.	Dissolving and regenerating rubber.
821,868.	May 29, 1906.	Armor for cycle tires.
822,786.	June 5, 1906.	Elastic wheel tire.
825,060.	July 3, 1906.	Process of reclaiming vulcanized rubber waste.
826,073.	July 10, 1906.	Cushion for hernia trusses.
830,695.	Sept. 4, 1906.	Process of and apparatus for manufacturing lined metallic hose.
833,633.	Oct. 16, 1906.	Device for preventing sea sickness on ships.
844,077.	Feb. 12, 1907.	Process for the production of aqueous caoutchouc solutions and the regeneration of rubber waste.
844,242.	Feb. 12, 1907.	Bust supporter.
851,960.	Apr. 9, 1907.	Process for manufacturing elastic fittings for tires.
852,273.	Apr. 30, 1907.	Elastic cob.
862,266.	Aug. 6, 1907.	Filter for dust suction apparatus.
863,523.	Aug. 13, 1907.	Letter, figure and the like in relief.
865,445.	Sept. 10, 1907.	Mold for pneumatic tires.
871,973.	Nov. 26, 1907.	Multi-part mold for pneumatic tires.
873,501.	Dec. 10, 1907.	Elastic tire for wheels.
877,769.	Jan. 28, 1908.	Protector against skidding.
885,530.	Apr. 21, 1908.	Dress preserver or dress shield.
887,295.	May 12, 1908.	Automobile tire.
891,866.	June 30, 1908.	Process of preparing india rubber for vulcanization.
894,490.	July 28, 1908.	Process for the production of pure caoutchouc.
897,334.	Sept. 1, 1908.	Method of manufacturing elastic material.
897,630.	Sept. 1, 1908.	Detachable rim for vehicle wheels.
904,930.	Nov. 24, 1908.	Airship.
906,306.	Dec. 8, 1908.	Process for vulcanizing a rubber solution.
906,834.	Dec. 15, 1908.	Elastic tire for wheels.
908,573.	Jan. 5, 1909.	Nozzle for syringes and the like.
909,001.	Jan. 5, 1909.	Divided wheel rim serving as tire retainer.
909,093.	Jan. 5, 1909.	Nozzle for syringes and the like.
910,520.	Jan. 26, 1909.	Method of manufacturing solutions of caoutchouc.
910,579.	Jan. 26, 1909.	Safety hose coupling for railway air-brakes.
921,148.	May 11, 1909.	Process for regenerating rubber waste of all kinds.
927,198.	July 6, 1909.	Process for the production of a leather substitute.
930,874.	Aug. 10, 1909.	Cellulose substitute.
933,516.	Sept. 7, 1909.	Connecting hose for railway cars.

¹The address of the Chemical Foundation, Inc., is 81 Fulton street, New York City, and of the Grasselli Chemical Co., 347 Madison avenue, New York City.

Patent No.	Date.	Title.
934,184.	Sept. 14, 1909.	Detachable wheel rim.
935,094.	March 29, 1910.	India-rubber, process for devulcanizing.
935,414.	Sept. 28, 1909.	Rubber.
935,849.	Oct. 5, 1909.	Apparatus for washing caoutchouc, gutta percha and similar substances.
936,635.	Oct. 12, 1909.	Apparatus for washing caoutchouc and similar substances.
939,256.	Nov. 9, 1909.	Superheater for use in connection with vulcanizers and other apparatus.
943,019.	Dec. 14, 1909.	Packing for piston rods and the like.
945,289.	Jan. 4, 1910.	Horseshoe with elastic bridges covering both ends.
946,090.	Jan. 11, 1910.	Machine for armoring cables.
947,535.	Jan. 25, 1910.	Cushion tire for vehicle wheels. Pump.
950,392.	Feb. 22, 1910.	Substitute for celluloid.
951,811.	Mar. 15, 1910.	Utilization of waste rubber.
953,094.	Mar. 29, 1910.	Process for devulcanizing india rubber.
953,327.	Mar. 29, 1910.	Elastic wheel.
960,116.	May 31, 1910.	Method of producing a caoutchouc-like elastic substance.
964,244.	July 12, 1910.	Separator (vulcanized rubber from fiber).
965,823.	July 26, 1910.	Process for hardening condensation products from phenols and aldehydes.
967,240.	Aug. 16, 1910.	Spring tire for wheels (with cushion tire).
967,585.	Aug. 16, 1910.	Compressive hose.
971,384.	Sept. 27, 1910.	Wheel for vehicles.
975,137.	Nov. 8, 1910.	Removable wheel rim for pneumatic tires.
978,541.	Dec. 13, 1910.	Woven elastic fabric.
986,712.	Mar. 14, 1911.	Vat-washing-machine ring.
998,966.	July 25, 1911.	Tire for vehicle wheels.
1,001,892.	Aug. 29, 1911.	Balloon envelope material.
1,003,244.	Sept. 12, 1911.	Purifying rubber or gutta percha.
1,006,274.	Oct. 17, 1911.	Process for the manufacture of rubber substitute.
1,006,976.	Oct. 24, 1911.	Dental suction plate.
1,010,751.	Dec. 5, 1911.	Boot-tree for use in treeing machines.
1,012,367.	Dec. 19, 1911.	Detachable wheel rim.
1,012,473.	Dec. 19, 1911.	Nipple cap.
1,016,991.	Feb. 13, 1911.	Elastic tire.
1,017,598.	Feb. 13, 1911.	Tire.
1,017,988.	Feb. 20, 1911.	Vehicle wheel with elastic spokes.
1,020,797.	Mar. 19, 1911.	Vehicle wheel rim.
1,025,122.	May 7, 1912.	Machine for making dress shields of india rubber.
1,026,418.	May 14, 1912.	Producing diolefines.
1,026,419.	May 14, 1912.	Producing diolefines.
1,026,420.	May 14, 1912.	Producing diolefines.
1,031,613.	July 2, 1912.	Process for producing coats.
1,031,837.	July 9, 1912.	Process of manufacturing caoutchouc-like products.
1,032,640.	July 16, 1912.	Rubber sole for shoes and the like.
1,034,468.	Aug. 6, 1912.	Tire for automobile wheels.
1,034,779.	Aug. 6, 1912.	Device for holding reins, leashes and the like.
1,335,107.	Aug. 6, 1912.	Elastic material.
1,036,532.	Aug. 27, 1912.	Shelter for dirigible balloons, airships, and the like.
1,037,158.	Aug. 27, 1912.	Process of manufacturing substitutes for oils, caoutchouc, resins and the like.
1,038,950.	Sept. 17, 1912.	Process of manufacturing hot vulcanized froth from india rubber, gutta percha, and balata.
1,039,316.	Sept. 24, 1912.	Method of rendering the joints of the casemated port-holes of war-ships water-tight.
1,040,850.	Oct. 8, 1912.	Process of preparing condensates from casein, phenols, and formic aldehyde and the product obtained thereby.
1,042,795.	Oct. 29, 1912.	Apparatus arranged on locomotives and other power-propelled vehicles for utilizing the resistance of the air.
1,043,620.	Nov. 5, 1912.	Bottle closure.
1,044,652.	Nov. 19, 1912.	Buoyant wearing apparel, cloth, and other articles.
1,045,574.	Nov. 25, 1912.	Rupture-truss.
1,047,603.	Dec. 17, 1912.	Turbine compressor or pump for elastic fluids.
1,048,822.	Dec. 31, 1912.	Apparatus for extracting rubber.
1,049,346.	Jan. 7, 1913.	Artificial breathing apparatus.
1,050,197.	Jan. 14, 1913.	Resilient wheel for vehicles.
1,051,046.	Jan. 21, 1913.	Brake pipe for railway cars.
1,051,767.	Jan. 28, 1913.	Cushion heel.
1,052,430.	Feb. 4, 1913.	Vulcanizing distinct parts or surfaces of rubber.
1,054,060.	Feb. 25, 1913.	Soldering apparatus.
1,057,680.	Apr. 1, 1913.	Production of isoprene.
1,061,539.	May 13, 1913.	Apparatus for administering narcotics.
1,061,881.	May 13, 1913.	Process for the production of a plastic or elastic substance.
1,062,973.	May 27, 1913.	Producing rubber-like compounds.
1,065,182.	June 17, 1913.	Producing isoprene.
1,066,873.	July 8, 1913.	Vent for nursing nipples.
1,069,151.	Aug. 5, 1913.	Process for the production of an insulating-coating on electrical conductors.
1,070,294.	Aug. 12, 1913.	Producing butadiene and derivatives thereof.
1,070,639.	Aug. 19, 1913.	Life-saving device.
1,073,498.	Sept. 16, 1913.	Elastic wheel.
1,074,881.	Oct. 7, 1913.	Dry viscose in a granular, soluble, and stable condition, and process of preparing the same.
1,076,490.	Oct. 21, 1913.	Method of massaging.
1,077,143.	Oct. 28, 1913.	Abrading disk.
1,077,766.	Nov. 4, 1913.	Ear appliance for facilitating hearing.
1,083,164.	Dec. 30, 1913.	Producing isoprene.
1,083,165.	Dec. 30, 1913.	Producing isoprene.
1,086,139.	Feb. 3, 1914.	Process of manufacturing caoutchouc-like products.
1,087,261.	Feb. 17, 1914.	Process of making isoprene.
1,087,815.	Feb. 17, 1914.	Horse shoe filling of rubber.
1,088,349.	Feb. 24, 1914.	Removable rim attachment for vehicle wheels.
1,088,907.	Mar. 3, 1914.	Process of manufacturing a substitute for vulcanite.
1,089,482.	Mar. 10, 1914.	Process of manufacturing an elastic foam from volatile solutions.
1,089,805.	Mar. 10, 1914.	Medical appliance.
1,089,932.	Mar. 10, 1914.	Milking device.
1,090,074.	Mar. 10, 1914.	Compounds or derivatives of cellulose and process of obtaining the same.
1,095,058.	Apr. 28, 1914.	Adhesive resinous preparations and process of producing the same.

Patent No.	Date.	Title.
1,097,973.	May 26, 1914.	Tennis or like ball.
1,098,331.	May 28, 1914.	Artificial denture.
1,098,858.	June 2, 1914.	Producing chlorine derivatives of the amyl series.
1,098,859.	June 2, 1914.	Producing isoprene.
1,099,107.	June 2, 1914.	Process for manufacturing a substance resembling natural rubber.
1,099,144.	June 2, 1914.	Device for inflating cushions, etc.
1,100,778.	June 23, 1914.	Fountain pen.
1,101,112.	June 23, 1914.	Elastic connecting device.
1,103,003.	July 7, 1914.	Detachable wheel rim.
1,104,722.	July 21, 1914.	Vulcanizer.
1,105,368.	July 28, 1914.	Elastic bedding plate.
1,106,748.	Aug. 11, 1914.	Pneumatic tire.
1,107,086.	Aug. 11, 1914.	Removable rim attachment for vehicle wheels.
1,107,355.	Aug. 18, 1914.	Spring wheel.
1,121,134.	Dec. 15, 1914.	Process of making caoutchouc substitute.
1,122,465.	Dec. 29, 1914.	Vulcanizer press.
1,125,019.	Jan. 12, 1915.	Elastic heel protector.
1,131,490.	Mar. 9, 1915.	Diving apparatus.
1,140,418.	May 25, 1915.	Toy or joke article.
1,144,812.	June 29, 1915.	Freely portable breathing apparatus.
1,150,508.	Aug. 17, 1915.	Respiratory mask or helmet.
1,150,642.	Aug. 17, 1915.	Process of manufacturing condensation products from formaldehyde and phenol.
1,153,030.	Sept. 7, 1915.	Diver's dress.
1,153,655.	Sept. 14, 1915.	Telephone cable.
1,156,153.	Oct. 12, 1915.	Vehicle wheel having a solid tire.
1,159,125.	Nov. 2, 1915.	Diver's helmet. H. Stelzner.
1,159,878.	Nov. 9, 1915.	Process for forming casein masses.
1,159,879.	Nov. 9, 1915.	Process for forming casein masses.
1,166,863.	Jan. 4, 1916.	Fountain pen.
1,167,318.	Jan. 11, 1916.	Manufacture of froth fillings.
1,168,070.	Jan. 11, 1916.	Manufacture of isoprene and homologs.
1,169,984.	Feb. 1, 1916.	Elastic wheel with solid tire.
1,179,417.	Apr. 13, 1916.	Ammunition box with rubber buffers.
1,180,704.	Apr. 25, 1916.	Method of producing waterproof coatings of balata.
1,181,049.	Apr. 25, 1916.	A wheel for cars, equipped with removable solid rubber tires.
1,189,110.	June 27, 1916.	Producing substances resembling caoutchouc.
1,189,788.	July 4, 1916.	Resilient tire.
1,189,789.	July 4, 1916.	Resilient tire.
1,191,801.	July 18, 1916.	Process for manufacturing plastic substances from the derivatives of cellulose.
1,192,036.	July 25, 1916.	Resilient tire.
1,192,310.	July 25, 1916.	Caoutchouc-like substances and process of making them.
1,195,117.	Aug. 15, 1916.	Device for removing wrinkles.
1,195,556.	Aug. 22, 1916.	Resilient tire.
1,206,519.	Nov. 28, 1916.	Elastic support for flat feet.
1,208,653.	Dec. 12, 1916.	Fountain pen.
1,209,223.	Dec. 19, 1916.	Diving dress.
1,209,224.	Dec. 19, 1916.	Diving helmet.
1,213,824.	Jan. 30, 1917.	Elastic wheel tire.
1,214,414.	Jan. 30, 1917.	Condensation product from phenols and formaldehyde.
1,218,332.	Mar. 6, 1917.	Manufacture of diolefine (isoprene) caoutchouc and caoutchouc-like substances.
1,218,713.	Mar. 13, 1917.	Production of caoutchouc-like bodies.
1,221,246.	Apr. 3, 1917.	Respirator.
1,222,683.	Apr. 17, 1917.	Respirator.
1,238,528.	Aug. 28, 1917.	Process of making plastic masses.
1,238,930.	Sept. 4, 1917.	Synthetic product resembling caoutchouc.
1,248,888.	Dec. 4, 1917.	Treating products resembling caoutchouc.
1,260,684.	Mar. 26, 1918.	Rubber-mixing machine.
1,294,662.	Feb. 18, 1919.	Producing substances resembling caoutchouc.

PATENTS OWNED BY GRASSELLI CHEMICAL CO.

1,062,828.	May 27, 1913.	Caoutchouc-like substance and process of making same.
1,062,912.	May 27, 1913.	Caoutchouc-like substance and process of making same.
1,062,913.	May 27, 1913.	Caoutchouc substance and process of making same.
1,062,914.	May 27, 1913.	Caoutchouc substance and process of making same.
1,062,915.	May 27, 1913.	Caoutchouc substance and process of making same.
1,069,951.	Aug. 12, 1913.	Caoutchouc substance and process of making same.
1,070,258.	Aug. 12, 1913.	Production of caoutchouc substances.
1,070,259.	Aug. 12, 1913.	Process of producing caoutchouc-like substances.
1,074,432.	Sept. 30, 1913.	Caoutchouc substance.
1,076,195.	Oct. 21, 1913.	Manufacture and production of a caoutchouc-like material.
1,076,575.	Oct. 21, 1913.	Process of producing beta-gamma-dimethylerythrene.
1,081,613.	Dec. 16, 1913.	Vulcanized caoutchouc and process of making same.
1,081,614.	Dec. 16, 1913.	Caoutchouc substance and process of making same.
1,082,522.	Dec. 30, 1913.	Caoutchouc substance and process of making same.
1,084,333.	Jan. 13, 1914.	Caoutchouc substance and process of making same.
1,084,334.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,335.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,336.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,337.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,084,338.	Jan. 13, 1914.	Vulcanized caoutchouc-like substance.
1,094,159.	Apr. 21, 1914.	Process of producing keto compounds from ketones and allylaminomethanes.
1,094,160.	Apr. 21, 1914.	Process of producing keto compounds from ketones and tetra-alkyldiaminomethanes.
1,094,539.	Apr. 28, 1914.	Process of producing 1,3-butyleneglycol.
1,113,614.	Oct. 13, 1914.	Colored caoutchouc substances and process of making same.
1,113,630.	Oct. 13, 1914.	Process for the production of caoutchouc substances.
1,113,631.	Oct. 13, 1914.	Production of caoutchouc substances.
1,113,759.	Oct. 13, 1914.	Colored caoutchouc substances and process of making same.

1,126,469.	Jan. 26, 1915.	Vulcanization of rubber and production of vulcanized rubber products.
1,130,903.	Mar. 9, 1915.	Production of vulcanized synthetic caoutchouc.
1,149,577.	Aug. 10, 1915.	Caoutchouc substance and process of making same.
1,149,560.	Aug. 10, 1915.	Caoutchouc substance and vulcanization product thereof.
1,159,380.	Nov. 2, 1915.	Isoprene.
1,178,721.	Apr. 11, 1916.	Producing caoutchouc substances.

THE SCRAP AND RECLAIMED RUBBER SITUATION.

DESPITE returning activity in rubber goods manufacturing in America stagnation is manifest in the scrap and reclaimed rubber markets. The demand for reclaimed rubber has seriously fallen off and reclaimers are operating their plants at less than full capacity, buying scrap only for actual needs. These conditions have reduced the demand for scrap rubber to a minimum.

This situation is attributable to the low prices ruling for crude rubber and to the relatively high prices asked for scrap. The price of crude rubber is the leading factor and scrap prices are secondary.

The better grades of reclaimed rubber are competitive with crude, consequently they find no sale when the prices asked raise the cost of their rubber content to practically that of crude rubber.

These price conditions have become operative since the first of the year and for some weeks past plantation *Hevea* has been and still remains a better purchase, on the basis of rubber value, than the better grades of reclaim. Manufacturers who were, hitherto, large users of reclaim are now giving preference to crude and this tendency is extending.

Scrap dealers claim there is no profit in their business at less than current prices, and reclaimers assert that the prices at which scrap is held by dealers practically forbid its conversion into products that can compete with crude rubber. Manufacturers of rubber goods are willing to use large quantities of reclaim, but are demanding lower prices. The reclaimers in turn are doing all possible to get the price of scrap on a lower basis and are not paying the prices asked except for shoes. They are fairly well satisfied in respect to tires, but claim that the prices asked for boots and shoes are very much in excess of this comparative value. Reclaimers frankly admit they are facing a critical situation in this matter and whether scrap prices will fall to the levels indicated by them is open to question. No less serious and trying is the difficulty in which the scrap dealers are placed.

Present scrap quotations are nearing the levels indicated as necessary by reclaimers, and the transition to more active buying does not appear to be far off. Probably the situation will ultimately be relieved by mutual concessions. Reclaimers believe that when buying starts there will be a big movement in scrap, owing to the fact that the output of rubber goods will be mostly for civilian use not subject to the restriction of reclaim operative in the manufacture of rubber goods for government use.

The common interest of reclaimers and scrap dealers calls for maximum cooperation to improve their trade situation.

Mutual price concessions must be supplemented by activity in seeking new outlets for the materials.

Already scrap dealers are finding a measure of relief in developing the business of supplying repairable tires for numerous tire-rebuilding companies, and supplying the voluminous demand of the tire repair trade for salvaged building fabric stripped from discarded automobile tires.

It is possible that reclaimers may try the manufacturing field, particularly along such lines as will afford ample outlet for their reclaim products. For example, rubber pavement and tiling have already been satisfactorily demonstrated and doubtless numerous other needs will be developed in the processes of invention and search for increased uses of rubber.

The British and United States Rubber Goods Export Trade Compared—1913-1918.

THE REPORT recently issued by the research bureau of the War Trade Board on the export trade policy of the United Kingdom for 1913-1918 indicates clearly the drastic measures which Great Britain has taken in cutting down her foreign trade in order to win the war, and they seem all the more drastic when her problems concerning foreign exchange are considered as well as the further fact that so much tonnage now departs from her ports in ballast.

While the rubber manufacturing industry has suffered less heavily than some other British industries, the sacrifices are shown to have been great, and the comparison with exports of similar American goods for corresponding periods is of interest.

Both the United Kingdom and the United States show increased exports of various products in different years to the European allies, these increases being greater on the part of the United States, in some instances, than on the part of the United Kingdom, partly because the latter was in the war from the beginning and unable to spare so much to her allies as was the United States.

RUBBER BOOTS AND SHOES.

In 1913 a little over 1,500,000 pairs of rubber boots and shoes were exported from the United Kingdom. In the first half of 1918 this had fallen to about 500,000 pairs, or about two-thirds of the former number. Of the countries specified, France is the only one showing an increase of purchases. British reexports of rubber boots and shoes showed a notable increase to the end of 1916 to Norway, Denmark and other countries. The total reexport in 1917 was over five times as great as the total for 1913, but had dropped to practically nothing by the first half of the calendar year 1918.

As compared with this, the United States exported over 2,666,000 pairs of rubber boots and shoes in 1913. Exports increased to nearly 4,000,000 pairs in 1917, but fell below 3,000,000 pairs in 1918, which, however, was nearly 20 per cent greater than in 1913. Excluding exports to the European allies, the quantity sold by the United States has fallen to one-half what it was in 1913. Early shipments to Belgium and Italy were large, but practically all of the increase, especially since the war began, has been to France and the United Kingdom. There have been large relative increases also in our much less important shipments to Newfoundland and Labrador, and some increase in shipments to Canada and South Africa. The shipments to South America and Asia have fallen off very much.

RUBBER TIRES AND TUBES.

In terms of value the United Kingdom domestic exports ¹ of rubber tires and tubes increased from over \$6,000,000 in 1913 to over \$10,000,000 in 1916, but showed a marked decrease in 1917 and the first half of 1918. Were increasing prices taken into account, it is probable that the total exports have decreased in

quantity during the period from 1913 to 1918. A considerable part of the exports went to France and Italy. From 1913 to 1916 there were increases in terms of value, though probably not in quantity, to Sweden, Denmark and Switzerland, as well as to British India and Australasia. There have been decreases, even in terms of value, to Argentina and Brazil.

United States exports ² of tires and tubes increased from \$4,500,000 in 1913 to \$21,000,000 in 1916, though the total had fallen to a little over \$15,000,000 in 1918. Excluding exports to the European allies, the total increased from less than \$3,000,000 in 1913 to over \$13,000,000 in 1918.

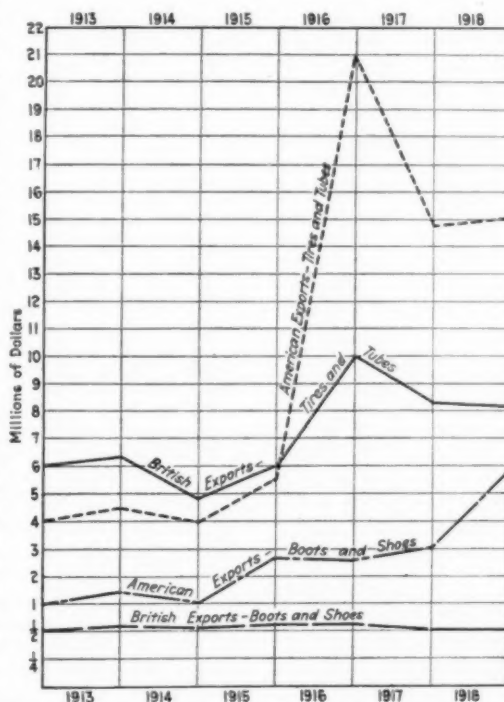
The great increases to the European allies were in the years 1915 to 1917, mostly in 1916, and the amount sent to them in 1918 was actually less than in 1913 or 1914. There have been especially large increases in sales to Canada, Mexico and North American countries; also huge increases to South American countries, notably to Argentina, Brazil, Chile, Peru, Uruguay and Venezuela, the total to South America being over sixteen times as great in 1918 as in 1913 or 1914. Much the same is true of shipments to Australia, New Zealand and Japan. Quantity statistics are not available, and it should be remembered that statistics in terms of value exaggerate the facts.

OTHER RUBBER MANUFACTURES.

British exports of rubber manufactures other than boots and shoes, tires and tubes, and waterproofed apparel, fell off greatly in terms of value during the years 1914 and 1915, but in 1916 and 1917 were almost as great as in pre-war years. They showed some decline, however, in the first half of 1918. During the years 1914 to 1916, inclu-

sive, exports to France increased about 50 per cent, and there were also increases to British India, China, Australia and New Zealand. During the same period exports decreased about 35 per cent to Italy; there were marked decreases to the United States, Mexico, Argentina and Brazil, while exports to Belgium were practically discontinued. Were the figures converted into terms of tons decreases would be shown in nearly every case.

Prior to the war the value of all American exports of rubber manufactures, other than boots and shoes, tires and tubes, belting, hose, packing, reclaimed, scrap and old rubber, was a little less than half that of corresponding British exports. While the value of such British exports was about the same in 1917 as it had been in 1913, the value of corresponding United States exports had more than doubled, being \$8,250,000, but falling to \$6,000,000 in 1918. There have been large increases in exports of this class of goods to the European allies, especially to France, Italy, and the United Kingdom; also to Canada, Mexico, Cuba, Argentina, Brazil, Chile, Peru, Uruguay, Venezuela, Japan, Australia and New Zealand. Here again, however, the quantities are exaggerated somewhat by the price data.



COMPARISON OF UNITED STATES AND BRITISH EXPORTS.

¹ Calendar year.

² Fiscal year.

Rubber Pavements: A Historical Résumé.

WITH THE PRICE of crude rubber constantly reaching new low levels, production capacity on the increase, unused raw stocks, heavy and scrap rubber plentiful, the rubber growers are devoting more attention than ever to finding new uses for their product, especially the lower qualities. The Rubber Growers' Association of London is moving in the matter, but no definite solution of the problem has yet been advanced.

Among the many prospective new uses for rubber, none is more important than its employment as a paving material and the opinion is freely expressed that with rubber at its present price we may look forward to its extensive use for that purpose. Rubber pavements are no longer in the experimental stage; their desirability, efficiency and durability have been convincingly demonstrated; their wide adoption will come when an adequate and continuous supply of rubber at low prices is assured, and that time appears to be near at hand.

Rubber flooring, both in the form of matting and tiling, has long been employed extensively in hotels, banks, churches, libraries, hospitals and other public buildings, stock exchange and large offices of many sorts, steamships, railway coaches and even for skating rinks, tennis and badminton courts, where its qualities of silence, cleanliness, neat appearance and comfort to the feet have been much appreciated and its beneficial effect upon the acoustic properties of large halls fully realized.

The practicability of such floorings is obvious to anybody, but the use of rubber in building highways has been regarded with considerable doubt by all not thoroughly familiar with the peculiar characteristics of rubber, and before rubber pavements are widely adopted a great deal of missionary work will have to be done. With the cost at about \$25 per square yard, it is useless to expect a municipality to consent to laying down miles of rubber road unless officials are convinced of its durability. While costly at the outset, experience has shown that rubber pavement lasts much longer than any other and will be less expensive in the long run.

ADVANTAGES OF RUBBER PAVEMENTS AND SIDEWALKS.

Aside from their remarkable lasting qualities, the chief claim for rubber pavements is that they eliminate the incessant clatter of city streets. The tremendous nerve-wrack of city noises is everywhere recognized by neurologists who attribute the greater prevalence of nervous disorders in cities to the constant din, of which traffic noises constitute seven-eighths. Most cities of any size have their anti-noise societies seeking to lessen noise nuisances of every sort. In modern rubber pavements such organizations will find a solution of many of their problems, and one which can be advocated with both confidence and conscience.

Rubber pavements would also add much to the comfort of those who must ride in other than pneumatic-tired vehicles, and would be far better for horses than any of the hard pavements now in general use. But there still remain the vast crowds that throng the sidewalks, the subways and the halls of office buildings. Their echoing footsteps on unyielding granite, marble, brick and concrete should stir humanitarians more than the aches of the relatively few remaining horses, or the pains of dray driver or motor-truck chauffeurs. What the cities need is rubber sidewalks before they even consider rubber streets. If there is any virtue in the rubber heel—and the great volume of business in this line indicates that there is much—rubber sidewalks would be a boon to mankind.

The general adoption of rubber tires for vehicular traffic of every sort and of rubber heels for pedestrians has to a certain degree accomplished the claims for rubber pavements and side-

walks, but several of the more important advantages of these improved street coverings cannot be secured by any other means. It will yet become common knowledge that such coverings, quite aside from their varied comforts, are economical in the long run, and at the same time it will be realized that road and sidewalk pavements used in conjunction with rubber tires and heels make for such maximum comfort as one gets in an automobile by adding shock absorbers to the best possible spring suspension.

EARLY PATENTS.

It is interesting to note that the pioneers in rubber, particularly in England, took an interest in rubber roadways.

As early as 1840, William Freeman took out an English patent for improvements in paving or covering roads, which specified a compound of india rubber combined with sawdust, sand or finely broken stone mixed in an iron cylinder, cooled and pressed. The blocks were about the size of bricks and were fastened together by rubber cement.

In 1843 Margaret H. Marshall was granted a patent for a composition which she called "Intonaco." Among other things, it was to be useful for making tessellated pavement. It was a mixture of vegetable gluten, albumin, oil, "indian rubber," and sulphate of lime.

A year later E. E. Cassell patented a paving compound consisting of chalk, mineral tar, melted rosin, liquid caoutchouc and sulphur.

In 1851 Sir John Scott Lillie patented a compound consisting of metallic substances mixed with coarse gravel and like materials, held together by bituminous compounds and cements.

While in 1856 Charles Haichois patented in England certain improvements in paving which consisted in the employment of lime, sand, asphalt, caoutchouc, gutta percha, marine glue and wood for the purpose of forming an even and durable pavement.

ANENT THE COST.

In 1913 Dr. Philip Schidrowitz, the well-known rubber chemist, delivered a lecture on the practicability of rubber pavements before the Society of Chemical Engineers of London. He went carefully into estimated details regarding the initial cost of the pavement, the expense of laying it and of its subsequent maintenance. Basing his calculations on crude rubber at 48 cents per pound, and on a composition that should be one-third rubber, he estimated that a ton of paving material would cost \$484, as compared with a cost for asphalt of \$9.68 to \$14.52, and of cement, concrete or stone of \$9.68 to \$24.20. He then compared the cost per square yard of rubber pavement with that of the materials generally in use, and found that a rubber road surface of the proper thickness would cost about fourteen times as much as asphalt or macadam and about seven times as much as granite or wood. Considering the large initial cost, he doubted the practicability of rubber paving, but with a better present knowledge of its lasting qualities and a very different crude rubber market the prospect seems very favorable.

THE INDIA RUBBER WORLD has consistently predicted that with 50-cent rubber the cost of rubber pavements on a large scale would be prohibitive, but that for certain purposes they would be sure to come to a considerable extent, and that their noiselessness and cleanliness, their freedom from rattle, jar and dust, are bound to bring them into constantly increasing favor where these advantages are most desired—as around hospitals, churches, schools, theatres, concert and lecture halls, around courts, in fine residential avenues, and even about apartment houses and office buildings of the better sort. With plantation rubber now ranging from 40 down to 25 cents per pound, Brazilian Pará from 56½ cents down to 21, Africans and Centrals respectively from 50 and

40 cents down to 23, Maniocbas from 48 to 32 cents, standard reclaims from 40 cents down to 12, and rubber production considerably in advance of consumption, the early use of rubber pavements on a large scale appears to be in sight, for economy as well as efficiency and durability have become talking points that can be proved. The practicability of general rubber paving being once acknowledged, there is no limit to the amount of rubber that could be usefully employed.

AMERICAN EXPERIENCE.

It is to England that America must look for detailed information regarding rubber pavements, as it is there chiefly that they have been manufactured and used. America is almost entirely without practical experience in the matter.

In 1912, looking ahead to the time when low-priced rubber might make the article economically available for street pavement, the Standard Asphalt & Rubber Co., of Chicago, Illinois, now the Standard Emarex Co., manufactured and exhibited rubber paving bricks 8 by 4 by 2½ inches, having horizontal grooves along their sides. The wearing surface on top contained 25 per cent of rubber and 50 per cent of "M. R. X.," a mineral rubber, the mixture having sufficient tenacity to resist the wear and tear of street travel and to remain unaffected by weather changes. The base or underpart of these bricks was of "Sarco," a compounding ingredient of an asphaltic nature. The bricks were intended to be laid an inch apart, the spaces all around being filled with melted "Sarco." This, flowing into the horizontal grooves, formed when cooled, a dovetailed anchorage which not only held the bricks securely in place, but prevented the slipping of horses and the skidding of automobiles. A practical demonstration of the wearing quality of these bricks was given by means of an old-fashioned tread-mill in which a relay of horses, sharp-shod with heel and toe calks, walked continuously on treads of the rubber brick composition without in the least cutting or bruising them.

The cost and inconvenience of the necessary frequent replacing of planks in the boardwalk at Atlantic City led, in 1913, to a decision to cover certain sections of the walk with a preparation of rubber, and, this experiment showing satisfactory results, to extend its use over the entire length of the promenade. But this project was in the line of rubber flooring rather than of paving.

Even in France little attention has been given to rubber pavements, although in 1917 Ch. de Chaudenberg took out a patent on a composition of rubber, asphalt or bitumen for use as a road surface.

PIONEER WORK IN ENGLAND.

Rubber pavement is by no means new in London, however. When the St. Pancras Hotel was built in 1876, it was necessary to provide a roadway under it leading to the busy St. Pancras railway station. To prevent annoyance to hotel guests that might be caused by traffic noises, this roadway was paved with rubber, and it lasted for thirty years before any renewal was necessary.

Perhaps the first use of rubber for sidewalks was in Edinburgh, Scotland. In 1879 the North British Rubber Co. paved the whole sidewalk in front of its warehouses on Princes street, a very busy thoroughfare, with rubber. The walk was 12 feet wide and 50 feet long. Thirty years later, in 1909, to carry out an agreement with the city, as the firm was vacating the premises, the rubber pavement was removed. Careful examination of the rubber failed to detect the slightest sign of wear. The surface was nowhere oxidized and it seemed to be absolutely unaffected by the elements or by the millions of persons who had passed over it.

In 1881 the roadway under the Euston Hotel to the Euston station in London was paved with rubber. The material was supplied by Charles Macintosh & Co., Limited, and the total approximate cost per square yard was \$32.70, of which \$5.60 per square yard was for concrete foundation work.

When the rubber was laid down it was two inches in thickness. In 1902, after 21 years of service, the portion on the incoming road into the station was taken up and carefully examined when it was found to have worn down to about ¾-inch in the thinnest place, namely, at the incoming end, where horses first stepped on to it from the macadamized road. Other parts of the rubber were worn down to 1 inch and 1¼ inches, these places in each case being near the center of the roadway. New material for renewal was furnished by the India Rubber, Gutta-Percha and Telegraph Works Co., Limited, at \$27.09 per square yard, the total cost of renewal, including laying, was \$28.75 per square yard after credit had been given for the old rubber taken up. The average yearly cost of examination and maintenance of the original pavement had been slightly under 6½ cents per square yard.

At this time the paving of the outgoing road from the station was 1½ inches thick, and later, in 1913, after 32 years' service, was still in use, although its early renewal was anticipated. This unequal wear was attributed to the grit brought from outside by incoming vehicles, from which outgoing ones are relatively free.

The courtyard of Claridge's Hotel, the resort of crowned heads and aristocratic travelers, was paved with rubber in 1900, and thirteen years later was found to be about one inch thick. In no case had it been necessary to replace the paving, but the old slabs were relaid, as they were working out of position, caused by their not having been securely fastened down in the first instance.

In 1904 the courtyard of the Savoy Hotel in London was paved with rubber at a total cost of \$9,733. The area of the courtyard is 3,750 square feet, of which 2,195 were covered with rubber. The rubber used was two inches thick, weighing 15¼ pounds per square foot, and it was laid on a smooth concrete foundation. Rubber having advanced materially in price, the cost of the pavement laid, not including the foundation, was \$40.78 per square yard.

The traffic at the Savoy is more exacting than at Claridge's, yet after ten years' service this pavement was reported as being in very fair condition, although the slabs did not in all cases fit very closely. Certain portions had been subjected to special wear, owing to the stopping and restarting of vehicles, particularly where studded tires were used. Oil dropping from motor cars had likewise affected the surface of the rubber paving, and it had been found necessary to relay some of the slabs, possibly owing to their not fitting well.

While the conditions under which the above-mentioned pavements are used do not quite compare with those of ordinary streets, because all are under a roof and are open only to passenger vehicles mostly rubber-tired, they are in constant use and the traffic, especially at Euston station, is very heavy. That they have given satisfactory service, however, for periods of ten to more than thirty-two years demonstrates convincingly their efficiency and durability.

THE DESSAU RUBBER PAVEMENT.

An interesting experiment was made in 1913 at the junction of the New and Old Kent Roads, one of London's most crowded corners, with the rubber-capped wood blocks patented by M. M. Dessau and for which a gold medal was awarded to the inventor by the Rubber Growers' Association. As compared with the ordinary concrete foundation of wood pavement, the new method is claimed to be an improvement, as the wood blocks are imbedded in an ordinary asphalt grouting, while the rubber caps prevent the penetration of moisture into the wood.

In Mr. Dessau's system jarrah wood blocks are used with a surface cushion of rubber, held rightly in position by dovetailing. The blocks are readily movable, an advantage in these days of frequent excavations for electricity, gas, water, telephone and telegraph conduits. They interlock perfectly and give absolutely watertight joints.

PRACTICAL ADVANTAGES OF RUBBER PAVEMENTS.

The section in the old Kent road, after carrying for 295 days some of the heaviest traffic in London, amounting to 90 tons per square foot per hour for twenty-four hours, was not perceptibly worn, whereas an adjacent 4-inch wood block lost half an inch in thickness in the same time under the same load.

So successful was this initial experiment in rubber street paving in the open that in 1914 the Federated Malay States Government subsidized the laying of rubber pavements in front of its Information Agency Offices at 88 Cannon street, London, E. C. This was done in anticipation of the Fourth International Rubber Exhibition in London and to advertise the Federated Malay States as a great plantation-rubber-producing country.

It is claimed that the road foundations do not require to be nearly so strong in the case of rubber roads as with ordinary wood blocks. The reason is that the vibration of the heavy traffic on the latter causes the concrete foundations to disintegrate, even if the thickness of the concrete is in excess of the now frequently adopted twelve-inch standards.

The fact that thinner foundations can be used with rubber roads can be set against the extra cost of the rubber blocks, though even then the costs will not be equal. But the life of the rubber road may be expected to be so much greater as to more than compensate for the extra cost, apart from the advantage of silence and the prevention of skidding and side-slip of vehicles.

The latter claim may at first sight appear a somewhat remarkable one, but it is a fact that the rubber road sections that have already been laid have proved to be most effective "non-skids," notwithstanding the prediction that when wet it would become very slippery. Even when covered with oil, or when black-leaded, the rubber road does not appear to cause motor vehicles to slip. This was hardly expected when the first sections were laid down. In fact, so convinced were English insurance experts that the risk of disaster through side-slip on rubber roads was enormous that they quoted absolutely prohibitive rates when one section was being laid down, and a guaranty had to be given to the local authority. Now the premium is just the same as would be the case for any other road; in fact, it is no longer necessary to insure.

RUBBER ROADWAYS LIMITED.

In 1915 a company known as Rubber Roadways, Limited, was formed under the auspices of the Rubber Growers' Association of London, with a proposed capital of \$150,000 for the purpose of exploiting the Dessau patent on the basis of plantation companies participating in the venture. It was proposed for them to furnish annually without charge during five years one-fifth of one per cent of their output, in addition to a like further quantity at 24 cents a pound. An aggregate output of 20,000 tons a year would have been sufficient to supply 40 tons free and 40 tons at the price named. This would have amounted at that time to a free grant of 1,000 tons of plantation rubber and an additional 1,000 tons at the nominal price of 25 cents per pound.

Owing to the war the project did not fully materialize and the activities of the company ceased, but it is now proposed to revive experiments and as a beginning 400 square yards or nearly a quarter of a mile of rubber roading is to be laid on High street in the Southwark Borough of London. The company is to furnish the rubber blocks for the initial covering and subsequent repairs for a period of years while the borough is to undertake the laying and maintenance.

Meanwhile hardwood blocks have become practically unobtainable in England and are likely to be very expensive for years to come. Experiments have been made to improve methods of attachment and the block now being used is the invention of George Anderson of the Leyland & Birmingham Rubber Co., Limited. The method adopted is that of vulcanizing the rubber cap onto a steel plate; segments of that steel plate are cut and

turned down to form lugs, and it is proposed to lay the blocks directly on the cement crust of the road, embedding the lugs in that crust.

While it is believed that this style of block and method of attachment mark a considerable advance over anything previously devised, it is not contended that it represents the ultimate in methods of road paving. Suggestions for improvement are plentiful and it is anticipated that methods will be found to utilize the lower qualities of crude rubber as well as waste rubber for this purpose. In this direction point the recent experiments in Southwark Borough, London, where the paving blocks are made wholly from reclaimed rubber vulcanized at high pressure in iron molds.

REMARKS ON "UNWOVEN RUBBERIZED FABRICS."

Contributed.

THE FACT that Mr. Respass contributes the result of his experiments in a very interesting article in the June issue of THE INDIA RUBBER WORLD tempts me to indulge in the following résumé of the subject. Researches in the matter resulted in the following conclusions: First, that the rubberizing of unwoven fabrics is by no means new.

GOODYEAR'S TISSUE.

In 1853, Charles Goodyear ("Gum Elastic," by Charles Goodyear, 1853, Volume I, page 190) says:

Tissue is formed of a layer of cotton wool which is sized before it is coated with gum. The dissolved gum is combined with it by the spreading machine which makes a complete admixture of the two articles. The fibre of the cotton is not broken . . . and it is therefore . . . when corded, stronger than woven fabrics of the same weight.

GOODYEAR'S VELLUM.

This is made of a bat of cotton of about ¼- to ½-inch in thickness. The gum is pressed into and intermixed with the wadding at one operation of the spreading calenders, and like other fibrous fabrics it is manufactured with great rapidity. It is made impervious to air and water with much less gum than the woven fabrics. Besides, the yarn is not liable to peel off as easily as it does in other fabrics. It is for most purposes the cheapest as well as the best of the non-elastic fabrics and when corded bids fair to supersede the coated cloths entirely for many purposes, particularly . . . for the heavier uses for india rubber canvas. It is made when desired in imitation of various kinds of morocco, kid and buff leather, and of different thicknesses and degrees of strength according to the thickness of the wadding.

GOODYEAR'S CORDED FABRICS.

Tissue and vellum are made very strong (and are torn with difficulty) when corded with silk, thread, tissue or spun yarn, for the same reason that muslins and other woven fabrics are strengthened by being barred or corded with threads stronger than those of which the cloth is made.

The different fibrous fabrics, when corded in this manner are even stronger than india rubber fabrics that are made of woven cloths. The uses of these fabrics are the same as those of tissue, vellum and vegetable leather, but on account of their great strength are applicable to a great many purposes for which those fabrics would not answer, such as . . . tarpaulins, coach cloths, etc.

As far back as 1825, Thomas Hancock patented a substitute for leather which consisted in saturating and combining various fibrous substances with a solution composed of caoutchouc, in which he mentions the use of a layer or layers of carded cotton. Incidentally in the same year he took out a patent which covered the mixing or covering fibrous substances such as hemp, flax, cotton, wool, etc., with the juice of a tree called the "*Hevea*."

In 1854, James T. Stoneham secured an English patent which covered the application of caoutchouc compounds in solution as applied to any felted fibrous matter, the rubber being applied by "forcing it into the material by pressure of rollers similar to calender rollers."

Coming down to more recent times the following is to be noted: Clark's patent felt made from rubberized cotton fleece.

("India Rubber, Gutta Percha and Balata," Brannt, 1900, page 208.) In the same line of endeavor may be cited the following: Rubberic, which is fiber blended with india rubber in solution, stretched and dried, used chiefly in making tires and mechanical goods, patented by William Golding, Manchester, England; and Wolfert, another English product, which is felt impregnated with a waterproof substance. ("Crude Rubber and Compounding Ingredients," Pearson, pages 135 and 139.)

Moreover, there should be taken into account the processes employed in making felt shoes several times essayed in New England with more or less success, all of which were based upon the impregnation of unwoven fabrics with rubber shaped and vulcanized.

It would seem, therefore, that the use of cotton bats in connection with india rubber applied either in solution or as a dry dough had been pretty thoroughly described. Special machines may of course assist in the production of a better or a cheaper product and the writer trusts that such is the case. But the product itself in any form which he has described would seem to be available to any who chose to manufacture it.

NOTE.—As our contributor almost says, it is accomplishment that counts, not suggestion, or experiment. Pneumatic tires were discovered long before they were made commercially. The man who first makes anything on a commercial scale is oftentimes the actual inventor and that in spite of previous predictions, suggestions or patents that ended in failure.—THE EDITOR.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

(717.) A correspondent inquires where in the United States Castilloa tapping-knives may be purchased.

(718.) An inquiry has been received for the address of manufacturers of paper transfers for marking inner tubes.

(719.) A reader requests information concerning a permanent, glossy, non-crackable varnish for hot-water bottles.

(720.) A subscriber inquires for the names and addresses of manufacturers of rubber tape suitable for patching canoes and small boats.

(721.) A correspondent desires to place with an American manufacturer an order for Hevea-tapping tools.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce or its district or cooperative officers. Request for each should be on a separate sheet, and state number.

(29,185.) A firm in Norway desires to purchase and an agency for sale of rubber goods, tires, etc. Cash against documents.

(29,188.) A firm in France desires agency from manufacturers in France and Morocco of dentists' and druggists' supplies.

(29,190.) A man in Switzerland desires to purchase or secure agency for sale of rubber tires, tubes, artificial leather, etc.

(29,318.) A druggist in Algeria desires to purchase pharmaceutical rubber goods of all kinds. Correspondence may be in English.

(29,322.) A merchant in Australia desires to purchase canvas shoes with rubber soles, white and gray, all sizes. Thirty days' sight draft, documents attached.

(29,346.) A firm in Spain desires agencies on commission basis for sale of rubber stamps. Correspondence in Spanish.

(29,359.) A firm in Norway desires to purchase and secure agency for sale of rubber shoes. Cash against documents.

(29,403.) A firm in Norway desires to purchase and an agency for sale of rubber goods and insulating materials. Quote

f. o. b. New York. Cash against documents at destination.

(29,413.) A firm in Norway desires to buy rubber overshoes. Cash against documents.

(29,419.) A firm in New Zealand desires agencies for sale of artificial leather.

(29,435.) A man in Switzerland desires to purchase pneumatic tires. Correspondence may be in English.

(29,443.) A firm in Brazil desires agencies for the sale of rubber tires and rubber goods. Correspondence may be in English.

(29,452.) A firm in Norway desires to purchase transmission belting. Quote f. o. b. American port of shipment. Cash against documents.

(29,456.) A firm in Italy desires to secure agencies for the sale of tires, etc.

(29,466.) The representative of a firm in Scandinavia, now in this country, desires to secure agencies for the sale in Scandinavian countries of all kinds of rubber manufactures, including galoshes, tires, hose, gloves, hot-water bottles, heels and soles, raincoats, and mechanical rubber goods.

(29,475.) A company in Norway desires to purchase and an agency for the sale of tires. Quote f. o. b. New York. Cash against documents at destination.

(29,494.) A firm in Norway desires to purchase rubber and rubber goods. Payment against documents at destination.

(29,311.) A company in Norway desires to buy rubbers and rubber heels; also, an agency for sale of same. Quote f. o. b. New York. Cash against documents at New York or destination.

(29,542.) A merchant in Italy wishes to purchase or secure an agency for the sale of dentists' rubber goods, hospital and orthopedic supplies, and other rubber goods. Payment on receipt of goods. Correspondence may be in English.

(29,547.) An importer in Italy desires to purchase suspenders and garters. Payment through American bank. Correspondence in Italian or French.

(29,586.) A commercial agent in Belgium wishes to purchase and secure an agency for the sale of insulated cables and wires for electric wiring, etc. Correspondence in French or Flemish.

(29,589.) A traveling salesman of Smyrna, Turkey, in the United States for several years, sailing soon for the Near East, desires to secure the representation of rubber goods in Turkey, Greece, the Balkans and Egypt.

(29,617.) A firm in Norway desires to purchase an agency for the sale of rubber and rubber goods. Cash against documents.

(29,656.) A firm in Belgium desires to purchase or act as agent or receiver on consignment for electrical insulating material.

(29,660.) A company in Italy desires quotations on 25,000 to 30,000 square yards of waterproof covering for wagons, to be standard quality; guaranteed samples requested. Correspondence may be in English.

(29,682.) A firm in Brazil desires to purchase cables and insulating material. (Refer to File No. 117,955.) Correspondence in Portuguese.

(29,687.) A company in India desires to purchase electrical cable-making machinery and raw rubber, insulation material, etc. Terms, cash against documents.

(29,692.) Proprietors of a company in Denmark now in this country seek exclusive agencies for sale in Denmark of rubber goods, including tires, hose, raincoat, physicians' and surgeons' sundries, galoshes, toys, etc.

(29,695.) Furniture dealer and manufacturer in Australia desires to purchase billiard rubber. Quote f. o. b. American port. Payment, sight draft with documents attached.

(29,711.) The purchasing agent of a firm having large department stores in several different countries, now in the United States, desires to purchase for immediate delivery fountain pens, rubber goods, etc. Cash or terms suitable to seller.

Tire Rebuilding and Repairing.

REBUILDING.

THE RAPID GROWTH in popularity of automobiling has developed a wide-spread demand among tire users for dependable rebuilt tires, tire repairs, and devices such as tire reliners, blow-out patches and other means for extending the usefulness of tires. In response to this demand innumerable tire repair plants are to be found on every hand. Some of these are developing their facilities to enable them to rebuild tires and

a number of companies are now organized and operating plants in various sections of the country, exclusively for rebuilding both wrapped tread and full molded tires.

The stock of repairable tires is selected from the standard makes of high-grade guaranteed fabric tires. Such old tires are stripped down from their road-worn condition to a basis of sound fabric plies, and after being repaired, are rebuilt with new rubber and fabric, or salvaged fabric, into a serviceable product salable as legitimate low-priced merchandise.

Restoring old tires to a serviceable condition by repairing is, of course, nothing new. The enormous number of tires in use and the desire on the part of their owners to derive the utmost of tire mileage to compensate for the high cost of motoring, form the basis of a great national business in the United States.

Previous to the abnormal conditions due to the demand for munitions of war, motorists generally did not appreciate the possibilities of expert tire rebuilding, but when convinced through necessity that it is practical economy and that the last thousand miles of tire service is in fact the cheapest, they accepted it as they have the factory-rebuilt automobile. Tire rebuilding is today an



(The B. F. Goodrich Co.)

METHOD OF MAKING SECTIONAL REPAIR.

essential and profitable business, depending fully as much on ability to judge whether casings are worth the necessary repairs as on skill in performing the work.

SELECTING TIRES FOR REBUILDING.

The first selection of road-worn tires for rebuilding is done by the rubber scrap dealers who specialize in old tires and who also salvage sound tire fabric from unrepairable old tires for use in rebuilding such as are repairable, and for manufacture into tire reliners, blow-out patches, etc. The final selection requires the expert judgment of a man familiar with tire construction, and able to diagnose structural weaknesses in order to eliminate all casings that cannot be turned into serviceable rebuilt tires.

TYPICAL METHOD OF REBUILDING TIRES.

Different methods have been developed for successfully rebuilding tires, both wrapped tread and full molded. The work consists essentially of four parts: (1) tearing down, (2) repairing,

(3) rebuilding, (4) curing. Two typical processes are here given.

One method is to tear apart the old tire, layer by layer, and use the material thus obtained (except the old rubber) in building a



(Allenburg Tire Equipment Co.)

THE CUTTING-DOWN PROCESS.

new tire, cutting out the damaged portion of the fabric and building up as in building a new tire of new material, except for the use of the beads and the old fabric bases. This method is effective but the cost is very little lower than where new fabric is used.

A more economical and practical way is the following, recommended by a concern which has developed the system of molding described.

TEARING DOWN.

An old tire, carefully selected, having a good body with no rim-cuts, is hung on an ordinary tire core and the center of the tread is skived down to the fabric for a space of about six inches in length. The tire is then put on a machine having an interchangeable tool which cuts through the outside ply of fabric from the tread to the bead point. The tire is then taken off, turned around, and the fabric cut from the center to the opposite bead. This leaves the outside ply of fabric cut through from bead point to bead point. This outside ply, including the tread, is now peeled back for a distance of four or five inches and stripped from the tire with the assistance of hand-tools.



(Hibbs Rubber Co.)

BUILDING UP REBUILT TIRES.

The object in removing the first ply of fabric from the tire to be rebuilt is to minimize the amount of labor in preparing the old tire for rebuilding and to secure the proper vulcanization of the rebuilt tire. The first ply of fabric, generally full of sand, etc., is removed before the carcass or body of the tire is cemented and the new tread applied.

REBUILDING.

The body of the old tire, after removal of the tread and first ply of fabric, is examined and if there are any blow-outs or weak places in it, these are stripped off as for an ordinary sectional repair.



(Allentown Tire Equipment Co.)

STITCHING DOWN THE TREAD.

The tire then goes to the building-up department, where it receives two coats of good vulcanizing cement and is allowed to dry, after which the blow-outs and weak places are repaired with reclaimed tire fabric. Any repairs made on the inside of the tire are made on the bias, giving the ends of the repair fabric the appearance of an ordinary splice. The tire is then mounted on a collapsible core, and one ply of reclaimed fabric is applied on the outside to replace that removed with the old tread. The cushion gum, bead fabric, breaker fabric and tread gum, all of new material, are then applied in the same manner as in building a new tire.

CURING.

The tire is now ready for curing in an adjustable tire mold. An air-bag is inserted in the tire and it is placed in the mold, the upper half is lowered to the proper place, the air-bag inflated to 150 pounds pressure and steam turned into the jacketed mold. After a cure of fifty minutes at sixty to sixty-five pounds the steam is turned off and water is circulated through the molds to cool them. The upper half is then raised and the tire is taken out. The air-bag is removed and the slight over-flow at the



(Hibbs Rubber Co.)

CURING IN ADJUSTABLE MOLDS.

edge of the tread trimmed off with a small V-shaped push-knife. The tire is then finished with a coating of talc.

Different brands of tires vary in size, one make will measure 6¾ inches from bead to bead, while another brand of the same

size will measure 7 or 7½ inches from bead to bead. Therefore, adjustable tire molds are made that give a perfect cure on either a full or scant size tire of a given size. In curing by the open-steam, wrappel systems this variation in the size of tires is easily overcome, but in the mold cure, the tire must fit the mold or it will not be perfect. If the tire is too large, it will be wrinkled or mold-pinched; if too small to fill out the mold there will be insufficient pressure on the tread.

The adjustable mold is made in two pieces—the lower part curing one side and the tread, while the upper part fits down into the lower and cures the opposite side of the tire, a complete cure being effected in one operation. In curing a scant size tire, the mold is closed completely, while on a full size tire it is left slightly open. Both the upper and lower cavities contain live steam, but valves may be installed in the steam line, so as to cut off the steam in either cavity for curing one side of the tire only, as in the case of a large rim-cut or side-wall repair.

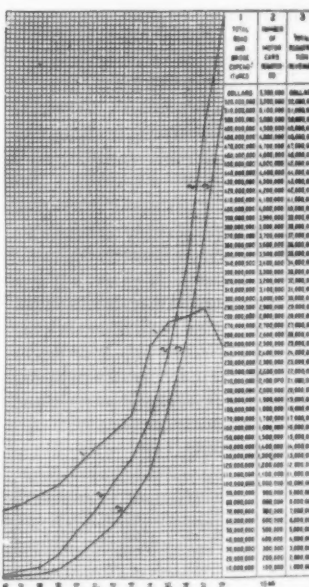
(To be continued.)

ROAD BUILDING AND TIRE BUILDING.

A COMPARISON of American road building and motor vehicle production during the past nine years vividly shows the necessity of enormous highway expansion. In 1910 approximately 7 per cent of this country's highways were improved,

and even to-day improved roads are estimated at only 15 per cent of the total mileage. But while good roads were being doubled, the number of automobiles has been increased some seventeen times. Within five years the main traveled roads will be clogged with traffic, and in figuring highway capacities and building new roads the ratio of increasing traffic must be considered.

Highway building is making great progress to be sure, but it is only in its infancy, and when the expenditures now authorized by the several States and the Federal Government have been exhausted the work will be only fairly under way and tremendous further outlays will be required. More has been accomplished in the Eastern States than elsewhere, but the Middle West and even the South are rapidly awakening to the need. It is probable that the people of thirteen States will have



The total road mileage of the United States is about 2,456,000 miles. With a total registration of 6,146,617 motor vehicles there is an average of 2.3 motor cars for every mile of public road. There is an average of one motor car registration for every 16 persons in the United States. California and Nebraska average one car to every 7 persons. Iowa and South Dakota, 1 to 8. Alabama, 1 to 51. Louisiana, 1 to 46. Arkansas, 1 to 42.

voted in favor of bond issues aggregating more than half a billion dollars for better highways before next winter. Illinois, Pennsylvania, Michigan and Utah have already authorized issues amounting to \$162,000,000, while the legislatures of Montana, Oklahoma, Alabama, California, Missouri, Georgia, Minnesota, Texas and West Virginia have recommended that the people vote this year for good roads appropriations totaling \$371,000,000. The overwhelming vote in the first four States mentioned seems to indicate a successful outcome in the other nine, and

doubtless other States will fall into line, all of which is of vital interest to tire manufacturers.

In proportion to populations, both England and France have made and are making more progress than America. Congress has appropriated \$275,000,000 for expenditure up to and including 1921, for improvement of the 2,500,000 miles of roads in the United States. France plans to spend \$152,000,000 on her national system of highways comprising 65,000 miles, while England has appropriated \$50,000,000 for expenditure on her 150,908 miles.

England has 239 citizens to every mile of road; there are 108 Frenchmen to every mile, and in America there are only 42 persons to the mile. According to these figures the highway system of the United States will not equal the ratio of French mileage to area until we have 5,000,000 miles of highway, while 7,500,000 miles will be necessary to meet the English ratio.

STRAIGHT-SIDE TIRES FOR FOREIGN MARKETS¹

It is now a conceded fact that the mileage obtained from a straight-side tire is normally greater than that obtained from a clincher of equal size. This is because the absence of a bead permits a given weight of car to be carried on a larger volume of air or inside diameter than does a beaded or clincher tire of the same cross-section. It has played no small part in increasing tire guaranties from 3,500 to 5,000 and even 10,000 miles or more.

These facts are generally admitted in the United States and, subject to demonstration, abroad just as they were here in the beginning. The prejudice of foreign buyers disappears when they are convinced that a straight-side tire will give more mileage at a given cost than a clincher tire. Therefore the problem of popularizing straight-side tires in foreign markets hinges on two things—the attitude of competitors and the ability to get replacements.

It may be conceded as a fact that the Continental European tire manufacturers will do everything they possibly can against the straight-side tires for the reason that they are better equipped to build clincher tires. The European car manufacturer will also combat the straight-side tire because it is an American development, and he will find the European tire manufacturer helping him on every hand. There will also be the European tire dealer to aid them, so that the elimination of the clincher tire will not be accomplished without a great deal of propaganda work and can never be accomplished without united action upon the part of the American car and tire manufacturers.

Whether or not this can ultimately be brought about, depends upon one thing only—the ability of the purchaser of an American car equipped with straight-side tires to get replacements wherever he may go with his car. This means practically universal distribution of straight-side tires, and is a problem which belongs primarily to the tire manufacturer, although looking at the question in its broadest sense, it is one of mutual interest to him and the automobile manufacturer.

The equipping of American cars for export with American clincher tires does not solve the problem, for these are inch-size tires and not interchangeable on the same rim with European millimeter-size tires, with the exception of 34 by 4½ and 880 by 120 m.m., the former, however, being made only with straight sides. Moreover, it is as difficult in most foreign markets to obtain an inch-size clincher as an inch-size straight-side tire. That the problem is susceptible of solution, however, was recently indicated in Argentina, where a change from 100 per cent clincher tire equipment, metric sizes, to 100 per cent straight-side equipment, inch sizes, was made without the loss of a single sale. This was brought about through co-operation with tire manufacturers who were notified in advance so that when the cars arrived there was already a stock of inch-size, straight-side tires to be had.

The same result can be obtained in all markets, with the possible exception of Continental Europe, through the co-operation of American tire and automobile manufacturers, as evidenced by distribution which the more aggressive tire manufacturers have already effected throughout the world.

In Continental Europe it is doubtful if this change can be brought about for some time, because the local manufacturers are at home and we are meeting them on their own ground, where they have every patriotic and local element supporting them, but it could doubtless be done even there through united team work of all American manufacturers of cars and tires. The straight-side tire is a better proposition for the ultimate purchaser, and if we can give him the same replacement service that is afforded with the clincher tires, we have helped him and thus have helped ourselves.

So long as some of our American manufacturers equip with clincher tire equipment, so long must all equip with clincher tire equipment. Not one of us would be willing to sacrifice his individual market and see some other American manufacturer take it, because this would not bring about the desired result. Team work and the united effort of the American manufacturers can accomplish this result while the efforts of one alone would be unavailing.

METRIC SIZES AND THEIR EQUIVALENTS.

Metric Sizes. Millimeters.	Approximate Size in Inches.	Metric Sizes. Millimeters.	Approximate Size in Inches.
550 x 65	22 x 2½	910 x 100	36 x 4
650 x 65	26 x 2½	765 x 105	30 x 4
700 x 65	28 x 2½	815 x 105	32 x 4
750 x 65	30 x 2½	875 x 105	34 x 4
800 x 65	32 x 2½	915 x 105	36 x 4
830 x 65	33 x 2½	760 x 120	30 x 4½-5
860 x 65	34 x 2½	815 x 120	32 x 4½-5
700 x 80	28 x 3	820 x 120	32 x 4½-5
750 x 80	30 x 3	850 x 120	33 x 4½-5
800 x 80	32 x 3	875 x 120	34 x 4½-5
700 x 85	28 x 3½	880 x 120	34 x 4½-5
750 x 85	30 x 3½	920 x 120	36 x 4½-5
800 x 85	32 x 3½	1020 x 120	40 x 4½-5
860 x 85	34 x 3½	1080 x 120	42 x 4½-5
710 x 90	28 x 3½	820 x 135	32 x 5-5½
760 x 90	30 x 3½	835 x 135	33 x 5-5½
810 x 90	32 x 3½	880 x 135	34 x 5-5½
840 x 90	32 x 3½	895 x 135	34 x 5½
870 x 90	34 x 3½	920 x 135	36 x 5-5½
910 x 90	36 x 3½	935 x 135	36 x 5½
960 x 90	38 x 3½	895 x 150	35 x 6
1010 x 90	40 x 3½	920 x 150	36 x 6
760 x 100	30 x 4	935 x 150	37 x 6
810 x 100	32 x 4	1000 x 150	40 x 6
870 x 100	34 x 4	1050 x 150	42 x 6

From "The Tire Rate Book."

USE TIRES OF RIGHT SIZE.

A nation-wide campaign will soon be launched by tire manufacturers to educate automobile manufacturers and dealers in the economic importance of equipping cars with tires of the right size. At the same time an effort will be made to check the wasteful practice of carrying too many "spares." This movement was inspired by the reports of the Commercial Economy Board to the effect that out of 21 cars in a test only seven were equipped with tires of the size recommended by tire manufacturers.

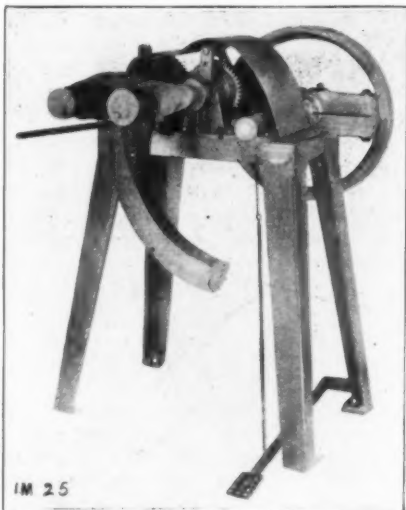
Car makers are now recognizing the principle that tire mileage is governed almost as much by the weight of unsprung parts that bear directly on the tire as by the total weight of the car.

Tire manufacturers will endeavor to drive home to the makers and distributors of cars that the thing of first importance in the selection of tires is size in proportion to the weight of the loaded car; and second, size in proportion to the distribution of weight between sprung and unsprung parts. Selection of tires in sizes recommended by manufacturers will reduce the number of spares necessary to carry on extended tours. This will be emphasized in the educational campaign of the manufacturers.

¹From a paper by D. B. Richardson, foreign sales manager of the Studebaker Corp., read at the Automobile Export Managers' convention held in New York City, March 7, 1919.

SALVAGING AUTOMOBILE TIRE FABRIC.

A DISCARDED ROAD-WORN AUTOMOBILE TIRE CARCASS averages half rubber composition and half cotton fabric. In the best makes the fabric is Sea Island and Egyptian cotton and much of it is sound and in usable condition for remanufacture.



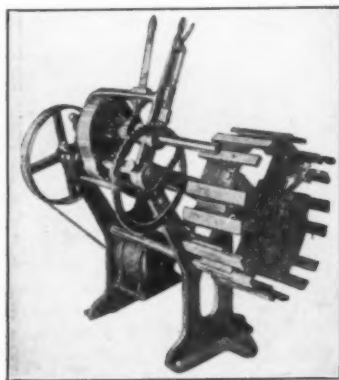
THE R. & D. FABRIC PULLER.

sale to the tire repair and rebuilding trades, and to manufacturers of tire reliners, blow-out patches, etc.

Various power devices are employed for stripping or pulling tire fabric which not only lessen the labor cost but produce a uniform product with the rubber wholly on one side of the fabric while the opposite side is entirely bare. Successful machines for this purpose are shown in the illustration and the operation of one is described below.

METHOD OF STRIPPING TIRE FABRIC.

The bead points are first trimmed off the old tire from which the fabric is to be stripped. The work is done with a six-inch knife. The tire is next turned inside out and slipped over the



HIBBS' FABRIC STRIPPER.

expanding drum of the stripping machine. By means of a hand-crank the drum is expanded until the tire is held firmly. One ply of fabric is then cut through clear across from bead to bead. One edge of it is peeled back a short distance by means of a pair of pincers until the end will reach once around the fabric shaft of the machine. This lever is thrown forward, bringing the shaft near the tire, the free end of the fabric is wound round the shaft

It is readily salable at a higher price than the old rubber portions. The possibilities in using salvaged tire fabric have led to the development of two profitable lines of business. Reclaiming or "pulling" old tire fabric is comparatively a recent addition to the business of the scrap rubber dealer. Many tons of usable fabric are recovered daily and find ready

and the clutch engaged. After the shaft has made a few turns, it is drawn away from the tire to allow room for the accumulation of fabric on the shaft. While the fabric is being removed from the carcass, should it tear or a large blow-out be reached, the clutch is disengaged and the fabric around the bad place

is peeled back with the aid of pincers. The operation of stripping the tire is continued until the level of the beads is reached.

REMOVING THE BEADS.

At that point the tire is taken from the machine and the beads removed on a special machine. This machine is simple of operation and consists of a rigid stand, somewhat like a tire-building machine, with a locking device to hold the tire securely, and an arm actuated by a hand-lever. This arm is provided with an interchangeable tool, of which one end is ground for removing beads, and the other for cutting through the treads and first ply of fabric. The bead-removing tool engages the exposed bead, pushing it away from the tire for a space of about twelve inches, after which it is easily pulled from the tire.

After removal of the beads the tire is returned to the stripping machine and the remaining plies stripped as described, down to the ply next to the tread. This ply, usually filled with sand and dirt, is worthless for reuse, and is discarded with the attached tread and side wall rubber, as junk.

The cost of stripping fabric by machine is a relatively small item in view of the amount of possible output and profit.

GERMAN WAR TIRES¹

THE FOLLOWING ACCOUNT of what the Germans were obliged to substitute for rubber tires on their army motor vehicles relates particularly to the tire situation in Belgium as affected by the blockade.

SUBSTITUTES FOR RUBBER TIRES.

The loss of rubber was a serious blow. While the Allies ran all their trucks on rubber tires, and even had automobile-hauled gun carriages rubber shod, the tire dimensions going as high as 60 by 9 inches, it was a rare occurrence to see a German truck with rubber tires. Of the hundreds of abandoned or captured German trucks I examined in Belgium, not more than a dozen had rubber tires.

The stories of artificial rubber appear to be a myth. The majority of these trucks had very thick wood rims; mounted on the rim of the wheel around this was a light steel rim which made contact with the road. Another equally common method was a series of rubber blocks, each of which was set in a pair of cups mounted respectively on an inner and an outer rim. The inner rim was fixed and the rim had a certain amount of elasticity. In this case, as in the first instance, a steel rim was in contact with the road, the rubber giving a cushioning effect without being subject to friction with the road surface.

In some instances this system of rubber blocks between two steel rims was applied to touring cars. The result, however, was not at all satisfactory; speed had to be kept down to 12 miles an hour, the vibration was tremendous, and there was a decided tendency to skid.

Sufficient pneumatic tires were obtainable to supply the cars used by the higher staff officers at the front, but the scarcity of rubber and the impossibility of finding a substitute for pneumatic tires restricted the use of touring cars to officers in the field.

CONVERSION OF A GERMAN TIRE FACTORY.

Because of the special nature of its requirements, the balloon companies had their own main supply depot, independently of the airplane service. It was one of the accidents of war that the factory used by the Continental Tire Co., of Hanover, until August, 1914, was taken possession of by the French, who enlarged it and later turned it over to the American Air Service as a balloon depot. Before the fighting this one-time German rubber factory had become the biggest hydrogen-gas producing center in the world, with an output of 500,000 cubic feet per day. During the active period this depot sent out 1,650 tons of special balloon material.

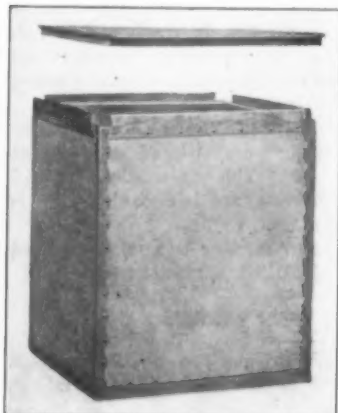
FROM SALOONKEEPING TO TIRE SALES AND REPAIR.

After July 1, thousands of excellent store locations now occupied as bar-rooms will be released for other business purposes. In Ohio alone the number is estimated at 6000. Tire manufacturers believe that liquor men who enter the retail tire and accessory field are undoubtedly making a wise choice and predict that hundreds of them will do so.

¹ By W. F. Bradley in "Automotive Industries."

WOODEN PACKING CASES AGAIN FOR CRUDE RUBBER.

DURING THE WAR the baling of plantation rubber for shipment from the Far East became a patriotic and necessary expedient to conserve ship tonnage.



A VENESTA CASE.

The plan was effective in that it resulted in a saving of 25 per cent in cargo space and about 20 per cent in weight, and was carried out with a measure of success, yet it was by no means popular with American rubber manufacturers. While it was found that in most instances baling afforded adequate protection, it seemed to have a deteriorating effect on the rubber, and in most cases it greatly increased the tendency of the sheets to stick together, causing considerable difficulty in separating them.

It is not surprising, therefore, that planters are again employing wooden packing cases at the solicitation of their patrons. The standard size measures 19 by 19 by 24 inches, which is equivalent to 5 cubic feet. Each case is securely nailed and banded with iron to withstand the long journey and severe handling. The average net weight of a case of first latex crêpe is 150 pounds, and that of smoked sheet 200 pounds, the tare in both cases averaging 20 pounds. A ship ton is equivalent to 50 cubic feet, and as a case of rubber measures 5 cubic feet there are usually 10 cases of rubber to the ship ton.

Experience has shown that cases almost cubical in shape and of the size adopted withstand many hardships better than oblong or larger cases. When filled they are relatively light, very strong and well adapted to Eastern methods of transport. Moreover, the weight of rubber per case is not sufficient to cause much sticking together.

The three-ply wooden cases with the grain crossing at right angles, such as the well-known Venesta, are probably the most suitable. They are shipped flat, put together on the estate, and held together by metal straps bent around all edges and riveted. Interior battens at top and bottom give them great strength and rigidity with extreme lightness. They can be opened at either end, and on taking off the lid the battens are also removed so that nothing remains to obstruct turning out the rubber. Such cases of the same internal capacity as sawed wood cases weigh from 40 to 60 per cent less and save from 10 to 15 per cent of the rail and ocean freight on the packed cases. They are smooth inside, practically dust-proof and air-tight, insuring minimum oxidation of the rubber and the best obtainable price for it. If desired they can be perforated with holes for ventilation without any loss of strength.

Well-seasoned Japanese Momi cases are satisfactory if fully $\frac{3}{4}$ -inch thick and before shipment they should be fastened securely around both end-edges and also around the middle, both endwise and crosswise, with hoop iron, care being taken that the nails used do not damage the rubber. Now that there appears to be no prospect of cases being permanently discarded for bales, the numerous suggestions that cases be devised having some practical method of opening the lid for inspection at various ports and permitting reshipment without the removal

of binding iron and nails or damage to the case will probably receive more attention.

Most estate managers now realize how important it is that all wood chips, saw-dust and splinters, which might become imbedded in the rubber, be removed from the packing cases before filling, also all dirt, leaves and twigs from the rubber itself. They are also aware that unless the rubber is thoroughly dry before packing, decomposition may ruin the entire caseful during transit and the shrinkage may exceed the 2 per cent allowed by sellers. This shrinkage, together with rough handling, causes the rubber to shake down until there is a certain amount of play inside the case. If the case is not of smooth planed wood, splinters will become imbedded in the rubber, and this play has even been known to knock out the sides of a case in rough handling. It has often been suggested that case be lined with various materials such as paper, muslin, cheesecloth, jackinette or straw matting, but experience has condemned them all. Of the various packing materials to avoid splinters and exclude extraneous dirt, probably the best is heavy waxed paper. It is preferable, however, to omit it, and if the cases are well-constructed of planed lumber and the rubber is thoroughly dry, none will be needed.

On well-supervised estates the packing is very carefully done, the sheets being laid flat and not folded. They are spread quite close to the sides of the case and as many put in as can be packed without undue pressure, talc or soapstone being used freely between the sheets of rubber to avoid moisture from sweating.

Well-cured, thoroughly dried and carefully packed rubber will reach its destination in ordinary unventilated cases, but if any tendency toward tackiness exists at the time of packing, transit in such cases may cause the whole consignment to ar-



PLANTATION RUBBER IN CASES.

rive in a moldy condition. Air-tight cases are therefore dangerous and a moderate amount of ventilation appears to be desirable.

CONSOLIDATION IN THE LITHOPONE BUSINESS.

A new organization capitalized at 10,000 shares of no par value and an authorized bond issue of \$500,000, has been formed in St. Louis, Missouri, by the consolidation of the Collinsville Zinc Co., the Potter-Barrell Process Syndicate, and various mining interests whose names are at present unannounced. The incorporators and officers of the new company, known as the Collinsville Zinc Corp., are as follows: Otto M. Meister, president; Robert W. Barrell, treasurer; R. W. Wild, secretary; directors, Henry W. Schultz and Joseph Carr. The concern will manufacture lithopone, barium, lead, zinc and arsenic salts, pigments, and insecticides.

RECLAIMING HARD RUBBER.

By Hancock Haskins.

SOFT RUBBER in its great variety of forms as scrap, trimmings, and worn out articles, has been reclaimed, recovered or regenerated almost from the time of Goodyear. Hard rubber scrap, however, for a long time was neglected, first because it was mechanically difficult, and second because none of the common acid or alkali processes were adapted or, rather, needed in its reclamation. It therefore happened that while old boots and shoes, belting, hose, and tires were collected, and a huge business built up on their recovery, hard rubber scrap was not sought for.

Hard rubber scrap comes in a great variety of shapes. Worn out battery jars, bases for truck tires, electrical sheets and rods, valves, druggists' and surgical fittings, etc., etc. Before proceeding to a discussion of the methods of turning hard rubber scrap into dust, a word concerning the use of this dust is in order.

Hard rubber dust is not desulphurized or devulcanized. Nor is this necessary, for the sulphur contained in it is in no sense a handicap. Indeed it is useful for revulcanization. The dust is simply added as if it were so much whiting and under pressure and heat it continues to be hard rubber but shaped and pressed into solid form.

For illustration take one of the well-known "dust compounds." It is: 5 pounds of Pará rubber, 20 pounds of hard rubber dust, 5 pounds of sulphur, and 3 pounds of substitute.

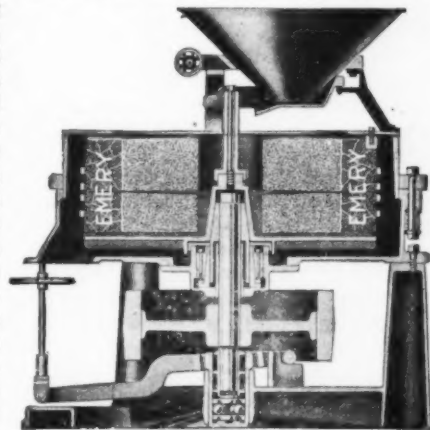
Of course, this is only one of hundreds, some containing much dust, some little, some calling for substitute and some for vegetable oil.

In soft rubber, hard rubber dust is of no use at all, but in hard rubber it is of prime importance, especially for electrical, physical or chemical purposes, or when it is to be made into objects demanding a high degree of polish.

In all of the above the dust must contain neither metal parts nor grit, and the best hard rubber scrap should be used, as it contains the highest percentage of rubber and no fillers such as chalk. The scrap should therefore be sorted by experienced hands before being ground. The best results are obtained with powerful, short-built mills provided with smooth, not ribbed, rollers. Regardless of the grinding system resorted to, the operation always results in the rollers of the grinders giving off more or less metallic powder. To pass through various sieves the hard rubber dust obtained, even if one of them is magnetic, does not remove all impurities. Sand or grit particles pass through sieves. Washing hard rubber dust means the loss of much of the valuable material; further, the drying of the washed dust requires much care and time, and there is always the risk that sufficient humidity will remain to increase the porosity of the finished product.

The best method of removing impurities is probably to use a combination of ventilators and sieves in a dust-tight room. The

following is a description of one of these fanning installations in a room ten feet high and fifty feet long, the ceiling, walls and floor zinc covered. In the room are two longitudinal partitions, reaching from the ceiling to the floor. At the point where the hard rubber dust enters, there is a sieve, with a wooden frame covered with zinc, the sieve running on iron rollers along an iron track. It is provided at the bottom with small openings for the rubber dust. As the dust leaves the sieve it is caught by a fan which disperses it throughout the room. The heavy particles such as metal and sand, immediately fall,



THE STURTEVANT MILL.

while rubber dust is blown farther along, where it settles.

The room has two observation windows, through which it can be ascertained that the dust has settled, it also has an air-tight door through which the workman enters to remove the dust, and finally it has a half-dozen slatted windows through which the air forced into the room by fans can escape. It does not take much experience in operating this dust room to discover where the finer dust deposits. Several qualities of hard rubber dust can be obtained simultaneously. Rubber dust not sufficiently fine can be reground and no dust is lost. The room described has been in use for a number of years, works almost automatically, and gives good results.

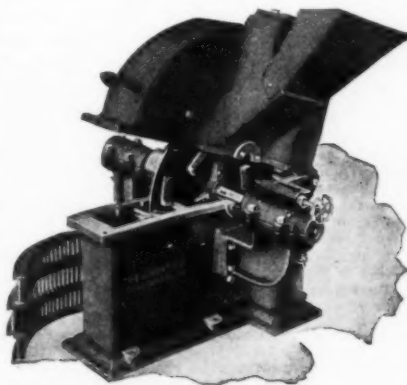
SECOND PAN-AMERICAN COMMERCIAL CONFERENCE.

This congress of 1,181 delegates representing the official, unofficial, commercial, financial and business life of all of the American republics, held in Washington, D. C., June 2 to 6, inclusive, under the auspices of the Pan American Union, was the most successful series of meetings of their kind ever held on this continent. Never before has such a conference been so comprehensive in topics discussed, so fair to all the countries participating, nor so productive of practical results.

Among the principal results of benefit to Latin America which will be early outgrowths of the conference are better steamship facilities, extensive railway, highway and hotel construction; improved commercial methods and regulations; extension of banking connections, ample loans and credit facilities; safeguarding patents, trade-marks and copyrights; extension and simplification of the parcel post and improvement of news and cable service; similarity of consular office administration, invoices and fees; revision and permanency of tariffs, insurance and packing; encouragement of vocational training for Pan American trade; and arrangements for holding the Second Pan American Financial Congress in Washington in January, 1920.

The complete proceedings, which will be the most up-to-date handbook on Pan American commerce yet published, are being printed and can be obtained on application to the director general of the Pan American Union, Washington, D. C.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.



DAY'S DUST GRINDER.

BUILDING BIAS BINDING.

IN THE MANUFACTURE of tennis shoes, as well as other shoes having uppers of duck, canvas or other fabrics, a very considerable amount of binding is used to cover the raw edges to prevent unraveling and to give finish to the goods.

Some of these bindings are cut the straight way of the cloth, others are cut on the bias, that is, at an angle of 45 degrees to the weft and warp threads of the fabric. The advantage of these bias bindings is that they lie flat when bound around curved edges or when turned around corners, as is necessary when binding the top of a shoe and continuing down the sides of the lacing opening.

Simple as this product seems, there are details in its manufacture which producers guard closely, and decline to divulge, for there are manufacturers whose sole business is to make these bindings of various materials, and of colors to match the textiles with which they are used.

THE METHOD OF MANUFACTURE.

The illustrations show the manner in which such bindings are made in a leading tennis-shoe factory. The method used is somewhat similar to the production of frictioned duck for the manufacture of tire casings, though of course this cloth is not frictioned but is used just as it comes from the mill, or is stiffened by a proper sizing.

The cloth is run, a number of thicknesses at a time, under a descending knife set to cut at an angle of 45 degrees, in other words, through a bias cutting machine. The diamond-shaped pieces are joined at their selvages, either by sewing or cementing, thus forming a continuous web which is wound tightly on a metal mandrel. This roll is then placed in a machine like that shown in the illustration, and from this wide roll, narrow ones are cut by a rapidly revolving circular knife which is adjustable to cut rolls of any desired width.

THE USES OF BIAS BINDING.

Such bindings, sometimes plain, or stiffened with starch or glue, are used for seam stays in various manufactures, and as



FOLDING BIAS BINDING.

back stays in shoe manufacture. By far the larger use is for binding the edges of cloth which would otherwise ravel out. It is used around the tongues of oxfords and boots, and also along the lace stays and around the tops of canvas footwear, unless the material itself is folded in and stitched to form a finish.

FOLDING, SEWING AND MEASURING.

For this purpose the binding must itself be folded that its own raw edges be concealed and protected. Various devices are used

for such folding, some of which do the work and rewind into compact rolls, while others are attachments to the sewing machines, which take in the flat binding, fold in each edge, and feed it to lap over the material to be bound, so that one stitching passes through both edges of the binding and the material between. During this operation the binding is also measured off into exact lengths to fit the part to be bound.

BIAS BINDING MATERIALS.

These bindings are made mostly of cotton cloth, usually white, brown or black for tennis shoes, though poplin and even satin



CUTTING BIAS BINDING.

are used by slipper manufacturers. Such bindings are also used in finishing many other different articles, such for instance as dress shields, in which case they are made from material the same color as the articles to be bound. Some bindings are cut from fabrics imitating leather, for use by the manufacturers of pocket-books. In fact, the uses for this seemingly unimportant line of goods are so many and varied that large factories are devoted exclusively to the production of the many varieties.

GOVERNMENT SPECIFICATIONS FOR RUBBER SHEETING.

M. H. SPECIFICATIONS.

MATERIAL. Shall be a cotton fabric, thoroughly coated with a white rubber compound, single coated, and weigh not less than 13 ounces per square yard. The rubber compound shall be calendered and not spread upon the sheeting. The rubber sheeting shall be vulcanized by open steam.

FINISH. The rubber sheeting shall have a smooth, uniform soft finish, free from stickiness and defects.

WIDTH.—The rubber sheeting shall be not less than fifty-three (53) inches in width.

CONSTRUCTION. The rubber sheeting shall show on analysis not less than 70 per cent of rubber compound. The rubber compound shall consist of not less than 30 per cent by weight of new and unrecovered rubber and shall show on analysis not over 4 per cent of its weight of organic acetone extract, nor over 2 per cent of its weight of free sulphur.

TENSILE STRENGTH. The rubber sheeting shall have a minimum tensile strength in the warp of forty (40) pounds, and in the filling of thirty-five (35) pounds. The tensile strength shall be determined by using the strip method on strips 9 inches long by 1½ inches wide from both the warp and filling directions of the fabric. The strips to be unravelled to exactly one inch in width.

TESTS. The condition of rubber sheeting shall remain unchanged when submitted to the following tests:

- (1) Subjected to urine for 18 hours.
- (2) Subjected to 5 per cent phenol solution for 18 hours.
- (3) Subjected to steam at 240 degrees F. for two periods of twenty minutes each.

The tests and analyses to be conducted in accordance with the procedure followed at the Bureau of Standards.

PACKING. The rubber sheeting shall be packed in rolls of approximately 50-yard lengths, and not more than 4 rolls to the box. Boxes to be of at least ¾-inch (finished size) lumber, tongued and grooved, white pine or spruce preferred, and must be new and of appropriate make and size. Ends to be reinforced by two cleats running perpendicular to grain of wood, and strapped. (Medical and Hospital Supplies Division, Washington, D. C., April 9, 1919.)

What the Rubber Chemists Are Doing.

VULCANIZATION WITHOUT SULPHUR.

THE RESULTS obtained by L. Ostromyslenski in vulcanizing rubber without sulphur, that were published in THE INDIA RUBBER WORLD, November 1, 1916, page 65, and November 1, 1917, page 84, have been reviewed by W. Bunschoten,¹ who has made an extended series of experimental investigations on the subject, the results of which are quoted below:

ACTION OF ACCELERATORS WITHOUT SULPHUR.

It seemed of importance to test whether accelerators used in the normal sulphur-curing process would show catalytic action in a mixture without sulphur and thus lead to a well-vulcanized product. In order to carry this out, mixtures were made of the following composition: 100 parts raw rubber, 4 parts dinitrobenzene, 1 part accelerone, or instead of the latter 1 part vulcacite, and these cured for $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$ and 3 hours at 147 degrees C. in the oil bath. The result was that the products were not vulcanized and in these experiments these accelerators were without effect.

Ostromyslenski found that different metallic oxides which accelerate the normal vulcanization process, in contradistinction to the above-named organic accelerators, do promote the curing without sulphur. Stevens² confirms that with mixtures of nitro compounds to which litharge has been added vulcanization does take place. All of the following tests were made with the addition of litharge, and it was found that vulcanization resulted.

In order to judge as to the behavior of various rubbers with reference to this new curing method, two different raw rubbers were used, namely, a slowly vulcanizing crepe and a fast vulcanizing sheet. The vulcanization coefficients (quantity of combined sulphur calculated on 100 parts of raw rubber) of these rubbers were, respectively, 2.6 and 4.5 in a mixture of $7\frac{1}{2}$ per cent of sulphur and 92 $\frac{1}{2}$ per cent of rubber after vulcanization for $1\frac{1}{2}$ hours at 50 pounds gage pressure.

With these rubbers the following mixtures were made: 100 raw rubber, 8 litharge, and 4 nitrobenzene. These mixtures were vulcanized for increasing periods in the oil bath at 147 degrees C., corresponding to 50 pounds gage pressure. Tensile tests were then made on a Schopper machine with the following results:

TABLE I. CURING TESTS WITHOUT SULPHUR.

Time of Cure, Minutes.	Smoked Sheet Vule. Coeff. 4.5.		First Latex Crepe Vule. Coeff. 2.6.	
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
30	0.5	697	Undercured	...
45	14.5	382	Undercured	...
60	20.4	906	Undercured	...
90	35.8	825	10.4	610
120	27.8	874	22.0	704

These figures show that curing took place, but that the mechanical properties are much inferior to those obtained with the normal vulcanization methods. Judging also by the exterior and the course of the elongation curves leads to the conclusion that all the test pieces were much under-vulcanized. That curing did take place was evident from the fact that the product was insoluble in benzene although considerable swelling took place.

Similar curing tests were carried out with m-dinitrobenzene in the same proportions and at the same temperature of cure. The products obtained did not show any swelling in benzene, thus proving that complete curing had taken place. (Table II.)

TABLE II. CURING TESTS WITHOUT SULPHUR.

Time of Cure, Minutes.	Smoked Sheet, Vule. Coeff. 4.5.			Latex Crepe, First Vule. Coeff. 2.6.		
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Load for Elongation of 600%, Per Cm ² .	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Load for Elongation of 600%, Per Cm ² .
10	103	798	32	Underc'd	Underc'd	Undercured
15	105	737	45	82.5	742	38
25	87	663	54	79.5	675	57
30	92	741	50	86	742	62
45	62.5	662	45	73.5	641	66
60	51	640	50	73.5	629	59
75	52.5	616	48	74	622	57
90	39.5	515	..	59.5	603	..
100	13.4	352	..	58	612	..

¹ "Communication of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry," at Delft, Holland.

² "Journal of the Society of Chemical Industry," February 15, 1917; also THE INDIA RUBBER WORLD, May 1, 1917, page 451.

These figures tend to show that after 10 to 15 minutes the sheet exhibits its best mechanical properties, which decline on prolonged curing. Initially the rubber, on increasing the time of cure, becomes somewhat stiffer. After some time this ceases and the curves of the stress-strain diagram begin to run parallel. If the vulcanization be continued the only consequence is that the end point is situated lower on the curve; in other words, the breaking load is diminished. While the sample with the highest vulcanization coefficient cured the faster in these experiments, this may not be accepted as a rule.

Other mixtures were prepared, consisting of 100 parts sheet rubber (vulcanization coefficient 4.5), 8 parts litharge and, respectively, 1, 2, 3, 4, 6 and 8 parts of m-dinitrobenzene; also of 100 parts sheet rubber (vulcanization coefficient 4.5), 4 parts m-dinitrobenzene, and, respectively, 2, 5, 8 and 11 parts of litharge. The vulcanization was carried out for increasing periods in the oil bath at 147 degrees C. The results are seen in Table III, from which it is evident that with increasing quantities of m-dinitrobenzene and litharge the velocity of vulcanization is increased.

TABLE III. INFLUENCE OF INCREASING QUANTITIES OF M-DINITROBENZENE AND LITHARGE ON THE MECHANICAL PROPERTIES AND THE VELOCITY OF VULCANIZATION.

Composition of Mixture.	M-Dinitrobenzene.	10 Minutes' Cure.		20 Minutes' Cure.		60 Minutes' Cure.	
		Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
Rubber 100 Litharge 8	1	59	974	...	...	76.5	923
	2	70.5	938	108	870	75	772
	3	100	1,005	106	818	79	715
	4	103	798	...	...	51	640
	6	...	...	88	700	73	598
Rubber 100 M-Dinitrobenzene 4	8	84	773	114	698	58	500
	Litharge.						
	2	...	...	27	846	81	741
	5	88	973	111	812	96	725
	8	103	798	...	...	51	640
	11	95	922	78	700	86	634

The influence of the curing temperature is shown by the figures given in Table IV.

TABLE IV. INFLUENCE OF CURE ON THE MECHANICAL PROPERTIES. COMPOSITION OF THE MIXTURE: 100 RAW RUBBER (VULCANIZATION COEFFICIENT 4.5), 8 LITHARGE, AND 3 M-DINITROBENZENE.

Temperature of Cure, Degrees C.	5 Minutes' Cure.		10 Minutes' Cure.		20 Minutes' Cure.		60 Minutes' Cure.	
	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.	Breaking Load, Kgms. Per Cm ² .	Elongation at Break, Per Cent.
137	7.4	650	68	908	99	845	85	727
142	8.6	693	117	970	94	793	60	682
147	33.4	931	95	890	127	847	79	763
152	40	926	88	823	...	...	...	...
157	86	940	94	808	84	760	40	710

The mechanical properties of the cured product do not seem to be influenced much by the temperatures of curing.

The author expresses the opinion that while this method of curing without sulphur could replace vulcanization with sulphur, it would not prove practicable, owing to the rapid deterioration of the product by aging. The alteration of properties that takes place is unexplained. Probably it is not due to oxidation because the acetone extract from a sample after six months' aging was found about equal to that of the raw rubber. From this it is also evident that very little dinitrobenzene remains after vulcanization. Also the product remained entirely insoluble in benzene.

OXIDIZING AGENTS.

The curing action of several inorganic oxidation agents was investigated because Ostromyslenski regards vulcanization as a kind of oxidation. The following list of substances were employed: arsenic acid, potassium persulphate, chloride of lime, potassium bichromate, potassium permanganate, potassium chloride, potassium nitrate, sodium nitrate, manganese peroxide, and potassium ferricyanide. The test mixtures consisted of 100 grams raw rubber and 4 grams of these oxidation agents. They were heated in the oil bath for one half hour to one hour at 147 degrees C.

Judging by the exteriors, with all the compounds a beginning of vulcanization took place, but in no case did a well-cured product result. Still, going by the exterior and the rate of dissolving in benzene, all mixtures were more cured than those of raw rubber mixed with nitro and dinitrobenzene, without the addition of litharge. It seems possible, therefore, that with these compounds also, with the aid of a suitable accelerator, good vulcanization could be obtained.

VISCOSITY TESTS.

A solution of one gram of rubber and 400 mgrs. dinitrobenzene in 100 cc. benzene was kept for some days in a brown bottle, after which the viscosity was measured, both in the light and in the dark. The resulting tests show that the viscosity of the rubber solution diminishes very rapidly under the influence of m.-dinitrobenzene in the light, even so rapidly that it was impossible to measure the viscosity in light, although an increase takes place, as is found from a measurement in the dark.

The same tests were repeated after the rubber solution had been heated for one-half hour at 65 degrees C., after adding dinitrobenzene. The concentration of the solution before and after heating was the same.

The results obtained show that the viscosity is increased under the influence of dinitrobenzene while heating is applied, and again declines rapidly in the light. From this one would be led to assume that dinitrobenzene assists both depolymerization of rubber solutions by light as well as the polymerization by heat. The vulcanization with dinitrobenzene could be regarded, therefore, as a polymerization by heating. Analogous with this the vulcanization with sulphur could be regarded as an acceleration of the polymerization, as assumed by Bernstein³ and Kirchor,⁴ while in addition, a combining of sulphur would have to be assumed to take place as a secondary process, either chemically or physically.

VULCANIZATION OF RUBBER BY ULTRA-VIOLET RAYS.

The following excerpt on the vulcanization of rubber by ultra-violet rays is from a series of articles on ultra-violet rays and their industrial applications by Ellis and Wells in "The Chemical Engineer," July, 1918, page 298:

Practical vulcanization of rubber by ultra-violet rays may be carried out with Olivier's apparatus (United States Patent No. 1,256,496, February 12, 1918). Olivier notes that rubber vulcanized by means of ultra-violet light is particularly useful for cementing purposes, since the treatment produces thick elastic liquids which are real liquid rubbers. With power cementing processes, the surfaces of rubber to be cemented were coated with a solution containing 6 to 12 per cent of rubber and usually several layers of such cement were necessary to effect cementing. With this method of producing the solution a much more dilute solution can be obtained than heretofore. In fact, the dilution may be 0.5 to 0.6 per cent.

When this latter solution is used for cementing, the two rubber surfaces absorb the solution, and it is claimed that upon placing the surfaces in contact a real autogenous union of the two rubber surfaces can be obtained. When surfaces of rubber are so united, they are not separated by a comparatively thick layer of cement, as with former cements, but they are in immediate contact on account of the penetration due to the dilution of the solution.

In carrying out the process, the first factor to be fixed is the duration of the exposure to the ultra-violet rays. Experience has shown that after a certain time of exposure, the decomposition of the rubber increases rapidly, whereas the vulcanization effect increases to only a small extent. The duration of exposure of course changes according to conditions, depending on the size of lamp used, the thickness of the solution, and the distance of the solution from the lamp. When using a 220-volt, three-ampere quartz lamp, and a solution a fraction of a millimeter in thickness placed at a distance of five centimeters from the lamp, the duration limit would be 40 seconds.

² "The Rubber Industry," 164, London, 1914.

³ "Kolloid-Zeitschrift," 14, 35, 1914.

⁴ Van Iterson, "Communications of the Netherland Government Institute for Advising the Rubber Trade and the Rubber Industry," Part VIII, page 239; THE INDIA RUBBER WORLD, April 1, 1919, page 362.

When solutions of rubber are being vulcanized with ultra-violet rays, the sulphur usually used can be replaced by sulphides and, in a general way, by any sulphides which can be decomposed by ultra-violet rays, such as carbon disulphide, allyl sulphide, or antimony sulphide. After vulcanization, when these sulphides are used, there is no uncombined sulphur left in the solution as, according to Olivier, it is precisely the sulphur which is decomposed out of the sulphides which allies itself with the rubber. Vulcanization can also be effected by adding to the solution at the same time ordinary free sulphur and carbon disulphide.

Under these conditions, vulcanization occurs concurrently between the rubber and the sulphur decomposed out of the sulphide.

DIFFUSION OF GASES THROUGH INDIA RUBBER

A study of the diffusion of gases through india rubber by Sir James Dewar appears as an appendix to a lecture on "Problems of Hydrogen and the Rare Gases" in the "Proceedings of the Royal Institute," volume 21, page 543. A few of the interesting results are as follows:

The relative rates of diffusion of the following gases, through Pará rubber membranes 0.1-mm. thick, at one atmosphere pressure, and 15 degrees C. are: air, 10; nitrogen, 0.69; carbon monoxide, 0.94; helium, 1.75; argon, 1.28; oxygen, 2.0; hydrogen, 5.6; carbon dioxide, 14.0. The absolute rate for air is 2.00 cc. per square centimeter per day. The relative rate varies with the temperature. It is difficult to associate the order of diffusibility with any chemical or physical property. For example, the rate of diffusion of helium, the most volatile of gases, is one-eighth that of carbon dioxide.

The rate of diffusion through india rubber of gases dissolved in various liquids was investigated. The relative rate of gases in solution is not so low as their proportional lowering of the volume concentration in the liquid. Water, for example, at 15 degrees C., dissolves 1/60 of its volume of air or hydrogen, but the rate of diffusion from air or hydrogen-saturated water is only reduced to one-quarter of that of the rate in air. The behavior in alcohol is the opposite. Air goes through the membrane with equal rapidity whether alcohol is around it or not.

"THE MUTUAL CONDENSATION OF UNSATURATED COMPOUNDS IN Connection with Terpenes, Resins and Rubber." H. J. Prins. Hilversum. "Chemisch Weekblad," Volume 16, 64-74 (1919). A review, with particular reference to polymerization of unsaturated compounds and the vulcanization of rubber. It is maintained that this type of reactions cannot be explained under one grouping without the aid of the valence theory and the theory of mutual activation. ("Chemical Abstracts," May 20, 1919, page 1071.)

CHEMICAL PATENTS. THE UNITED STATES.

PROCESS OF PRODUCING RUBBER COMPOSITIONS AND VULCANIZATION PRODUCT, consisting of adding to rubber a wet precipitate of barium sulphate formed in the presence of a colloidal gel (animal glue), mixing the resultant precipitate with the rubber, drying the mix, and heating it with a vulcanizing agent to effect vulcanization.

The homogenous vulcanized product formed by adding to rubber and animal glue formed into a gel by water, mixing the gel with the rubber, driving off the water, and heating the resultant dry mix with a vulcanizing agent to effect vulcanization. (Robert C. Hartong, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,301,693.)

IMPREGNATION OF FABRICS FOR BALLOONS. The fabric is first impregnated with soft paraffine or petroleum, etc., and coated on one side with a compound of rubber, ceresin wax, litharge, and sulphur, applied in a dissolved state and subsequently vulcan-

ized. (Joseph Harold Mandleberg, Pendleton, Manchester, England. United States patent No. 1,302,064.)

COMPOSITION FOR IMPREGNATING AND COATING BALLOON AND LIKE FABRICS: 100 parts by weight of rubber, 1 to 5 parts of wax, $\frac{3}{4}$ to 2 parts of litharge and 2 to 4 parts of sulphur. (Joseph Harold Mandleberg, Pendleton, Manchester, England. United States patent No. 1,302,066.)

TREATING RUBBER TO INCREASE ITS ELASTICITY, which consists of subjecting it to the action of a resinous gummy preserving juice in its natural state. (Ruben Zertuche, Torreon, Mexico. United States Patent No. 1,302,266.)

PUNCTURE-CLOSING SOLUTION. A compound consisting of equal parts by volume of distilled water and alcohol, there being admixed to each gallon of the combined liquid three ounces by weight of a filler such as paper pulp, and silk fiber, the liquid serving to carry the fiber and pulp to a hole in a tire whereby a mat is formed to bridge the hole. (Ralph Noll and Christopher C. Shephard, Chadron, Nebraska. United States patent No. 1,302,416.)

VULCANIZABLE COMPOSITION. Powdered scrap leather is boiled in water containing sufficient caustic to saponify the fatty matter in the leather without dissolving the leather, then the treated leather powder is dried, and mixed with a resilient vulcanizable binding material under the action of heated mixing rolls. (John Stuart Campbell, London, England. United States patent No. 1,302,463.)

PLASTIC COMPOSITION. A solution of glue containing sulphonated fish oil and formaldehyde. (Lothar E. Weber, Brighton, Massachusetts. United States patent No. 1,302,739.)

PLASTIC MATERIAL AND PROCESS. A solution of glue and water, adding thereto sulphonated fish oil, adding and mixing therein a quantity of fibers, supplying to the product a comparatively weak solution of formaldehyde, and subjecting the product to pressure and heat. (Lothar E. Weber, Brighton, Massachusetts. United States patent No. 1,302,740.)

RUBBER COMPOSITION AND METHOD OF MAKING. A mixture of rubber and chemically treated cotton in powdered form, and free, or substantially so, from the tensile strength possessed by untreated cotton. (John M. Bierer, assignor to Boston Woven Hose & Rubber Co., both of Boston, Massachusetts. United States patent No. 1,303,759.)

RESILIENT RUBBER COMPOUND MATERIAL—A sheet of resilient material having a non-slipping hairy surface consisting of a vulcanized rubber binder and incorporated wool fibers; the proportion of rubber to wool being such that the resulting material possesses the tensile strength and wear-resisting property of vulcanized rubber loaded with zinc oxide, and the elasticity of pure rubber. (Talmon H. Rieder and William B. Wiegand, Montreal, Quebec, Canada, assignors to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut. United States patent No. 1,305,008.)

THE UNITED KINGDOM.

VULCANIZING INDIA RUBBER. Potassium or sodium dissolved in a primary or secondary aromatic amine is used as an accelerator of vulcanization. The particular accelerators described are sodium or potassium in aniline or potassium in diphenylamine. (Dunlop Rubber Co., 14 Regent Street, Westminster, and D. E. Twiss, Royal Road, Sutton Coldfield, Warwickshire, England. British patent No. 124,276.)

BALLOON FABRICS, ETC. Fabrics for balloons are impregnated on the uncoated side with petroleum jelly solution. (J. Mandleberg & Co., Albion Waterproofing Works, Pendleton, Manchester, England. British patent No. 124,494.)

IMPREGNATING AND COATING FABRICS. Balloon and like fabrics or materials are rendered impermeable to gases by impregnation and coating with a solution of a composition consisting of 100 parts of rubber, 1 to 5 parts of ceresine or paraffine wax, $\frac{3}{4}$ to

2 parts of litharge, and 2 to 4 parts of sulphur. A number of coatings of different strengths are applied to the fabric, the earlier one being very thin, so as to cause thorough impregnation. After vulcanization by slowly raising the temperature to 285 to 295 degrees F., the fabric may be treated with petroleum jelly in solution. (J. Mandleberg & Co., Albion Waterproofing Works, Pendleton, Manchester, England. British patent No. 124,495.)

BALLOON OR AIR-SHIP FABRICS. Gelatine is used for or in addition to layers of hitherto used materials, such as rubber, oil, cellulose compositions, etc. (R. T. Glazebrook, National Physical Laboratory, Teddington, Middlesex; W. M. Rouse, 74 New Oxford Street, London; and A. Johnston, Castle Mills, Fountainbridge, Edinburgh. British patent No. 124,520.)

THE DOMINION OF CANADA.

SOLE COMPOSITION. A vulcanized shoe sole or heel composed of a mixture of comminuted waste felt roofing saturated and treated with asphaltum and boiled linseed oil, reclaimed rubber, and vulcanizing material. (Charles S. Bird, assignee of George R. Wyman and Andrew E. Currier, all of Walpole, Massachusetts. Canadian patent No. 190,652.)

RUBBER SUBSTITUTES. The process and product of a vulcanized composition of matter consisting of linseed oil which has been oxydized at a temperature of 200 to 250 degrees C., aluminum stearate, a numeral hydro-carbon of high boiling point, an inert filler, and sulphur. (Edward S. A. Cohen, Hague, The Netherlands. Canadian patent No. 190,802.)

THE FRENCH REPUBLIC.

PROCESS OF REGENERATING VULCANIZED SOFT OR HARD RUBBER. (B. J. F. Varenhorst and J. G. Fol. French patent No. 489,230.)

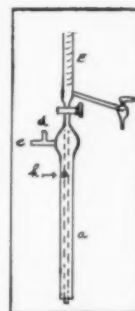
GERMANY.

PROCESS FOR IMPROVING CAOUTCHOUC-LIKE SUBSTANCES. The caoutchouc-like substances obtained by treating butadiene or its homolog with metals such as sodium, in presence of carbon dioxide (see French patent No. 459,005), do not yield satisfactory products on vulcanization. Good results are obtained, however, if the substances before vulcanization are subjected to mild oxidation, corresponding to an absorption of 3-4 per cent or even 6 per cent of oxygen. For example, the product obtained from isoprene by the action of sodium in presence of carbon dioxide, after being washed with water, is spread out while still moist and exposed to the air. After three days, when about 3 per cent of oxygen has been absorbed, the sticky mass is worked on the rolls, mixed with sulphur, etc., and vulcanized. (Badische Anilin und Soda Fabrik. German patent No. 307,341.)

LABORATORY APPARATUS. IMPROVED AUTOMATIC BURETTE.

THE improved automatic burette shown in the illustration was devised by Mr. George J. Hough, Bureau of Soils, United States Department of Agriculture. Its merits are that it requires no bracket and can be quickly cleaned and used for different solutions.

The base of the burette consists of a glass tube, *a*, one-half-inch in diameter, for elevating the solution, surrounded by a much wider tube; and when inserted in a rubber stopper to fit the solution reservoir, this gives the apparatus sufficient stability so that it requires no bracket to hold it upright. The tube *c* is for the attachment of a rubber pressure bulb, and tube *d* is closed with the finger when pumping air into the reservoir. The hole *h* in the outer tube equalizes the pressure in the reservoir and must be above the level of the liquid in the reservoir.



AUTOMATIC
BURETTE.

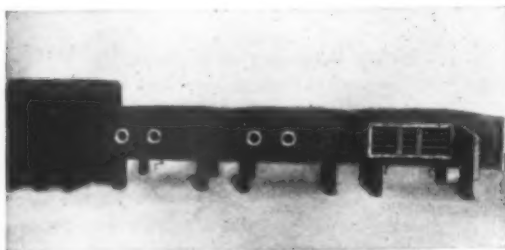
the reservoir.

New Machines and Appliances.

COMBINED IMPREGNATING VACUUM DRYER AND SOLVENT RECOVERY APPARATUS FOR FABRICS.

THE ACCOMPANYING ILLUSTRATION shows a unit of an apparatus in which fabrics and tire duck may be impregnated with rubber solution, dried in a vacuum and the solvent subsequently recovered for reuse.

In front of the first section is placed a chamber which is fitted with a sealed connection, separating it from the dryer. The first



THE DEVINE IMPREGNATING AND SOLVENT RECOVERY APPARATUS.

section is built of sufficient size to contain the entire roll of fabric and is equipped with an impregnating tank filled with the rubber solution. As the roll unwinds, the fabric passes through the tank and is impregnated with the solution. The fabric is then automatically taken into the large chamber of the dryer and thence runs through the entire length of the dryer in four passes.

The heat vaporizes the solvent in the impregnated duck, this vapor going over to the condenser, where it is condensed, and the solvent passes through the solvent recovery apparatus where it is recovered. The finished, dried, impregnated duck is wound up on another roll and after the operation is completed, the door of the unit is opened and the finished roll removed. (J. P. Devine Co., Buffalo, New York.)

CRUDE RUBBER SLICING-MACHINE.

When cases or bales of crude rubber arrive at the factory and the coverings are removed, it is quite a difficult matter to separate the rubber sheets, while the baled rubber is often a solid mass. For reducing the rubber to pieces convenient for the



THE PEERLESS RUBBER CUTTER.

washing machines, a novel machine has recently been invented that combines the power hack-saw principle with mechanical features necessary in a machine, for slicing crude rubber of all sorts.

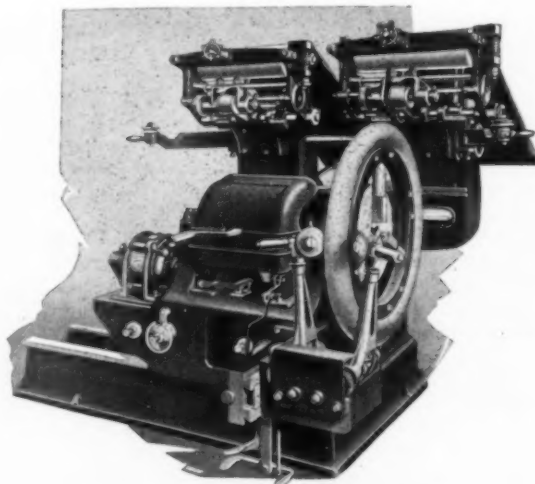
It is of the horizontal type with direct-connected motor, or belt drive, and special gearing for actuating the sickle blade

that reciprocates in a guide. A spiked vise, 28 inches between the jaws and 24 inches high holds the block of rubber while a film of water is distributed to all parts of the blade to facilitate the cutting operation. If a hard foreign substance should be encountered in the rubber, a relief is automatically applied which offsets the machine and prevents breakage.

This machine operates at a speed of 150 strokes per minute and feeds downward at the rate of $\frac{1}{4}$ -inch per stroke. Although it weighs 1500 pounds, and occupies 8 by 3 feet of floor space, it may be moved wherever desired with comparative ease. It is claimed that 125 to 150 bales of rubber can be cut in ten hours on this machine by one man. (Peerless Machine Co., Racine, Wisconsin.)

PNEUMATIC-TIRE-BUILDING MACHINE OF NOVEL CONSTRUCTION.

FILLER THREADS of tire-building fabric are stronger than the warp threads. Therefore, a better tire is made by reversing the warp and filler threads in building up the carcass of a pneumatic tire. In cord-tire construction the same reason



THE KNIGHT TIRE-BUILDING MACHINE.

exists for reversing the threads of cord fabric. For this purpose the present machine is provided with two independent fabric-feeding tables and mechanisms, and is operated in the following manner.

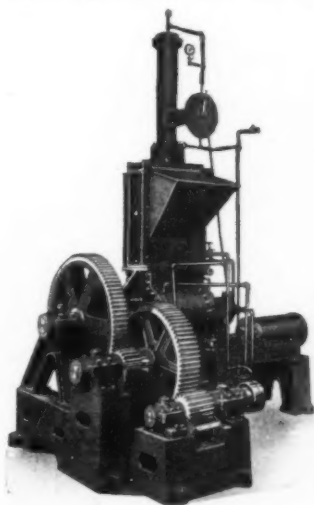
The first fabric strip is threaded through the feed-mechanism, the pressure adjusted by a hand-wheel, and the fabric end drawn down by hand until the cone-roller rests on the core to which the fabric is attached. When the machine is started the cone-roller revolves the feed-mechanism at a speed 14 per cent slower than the core speed, thereby providing uniform tension.

As the core revolves, another ply is attached to the first ply on the table, and when the end of the first ply reaches the core the machine is stopped and the second ply separated from the first and thrown back over the pressure-bar. When the two ends of the first ply are joined together on the core, the latter is revolved at an increased speed and the first ply stitched down. The core is then removed to the second feeding mechanism and the process repeated in applying the second ply. In making a small tire that does not require more than four plies of fabric, the bead-setting arm is swung against the tire and the bead set

in proper place by one revolution of the core. This is again shifted to the first position, the opposite bead set in place and the end of the fabric taken from the pressure bar and drawn down until the cone-roll rests on the core and the core revolved to apply the third ply. After this is stitched down, the core is again shifted to receive the fourth ply, which completes the process for a small tire. (The Knight Manufacturing Co., Canton, Ohio.)

AN IMPROVED AUTOMATIC MIXER.

Enclosed mixers of the type here shown are now considered as standard rubber-mill equipment and have demonstrated their superiority on the softer stocks, all black tread stocks and many mixtures that are injurious to workmen.



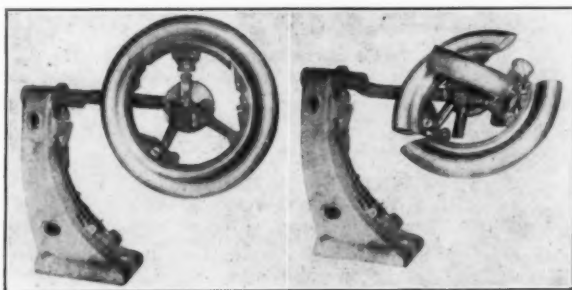
THE BANBURY MIXER.

The important improvements embodied in this new machine include a large cooling area to reduce the temperature of the material being mixed; it is practically dust proof; the discharge door easily slides so that small effort is required to discharge the material that leaves the machine in comparatively small pieces; the shafts, bearings, and general construction are of a rugged design to withstand the severest strain; and the motor drive is substantial in construction and quiet in operation.

This machine handles batches from 75 to 150 pounds, depending on the gravity. A larger size is capable of successfully mixing batches of 450 pounds, gravity 1.5. (Birmingham Iron Foundry, Derby, Connecticut.)

COLLAPSIBLE TIRE-BUILDING FORM.

The D. M. B. collapsible tire-building form shown in two views is unique in design and simple in operation. It is specially adapted for use in making tires which are cured in molds on air-bags, because by its collapsible construction it can be so folded



CLOSED. THE D. M. B. TIRE-BUILDING FORM. OPEN.

upon itself that the unvulcanized tire can be removed with little effort from the form without stretching the beads or otherwise damaging it.

It is claimed that the use of this form will greatly lessen the cost and labor of tire building. In fact, its introduction has made possible the employment of women as tire builders on account of the simplicity and ease of its operation.

Referring to the illustrations the view on the left shows the form in closed position ready for building the tire, the view on the right shows it in open or collapsed position for removal of the tire. This building form is very easily and quickly changed from closed to collapsed position by drawing inwardly the upper sliding section by means of a rack and pinion actuated by a hand socket wrench.

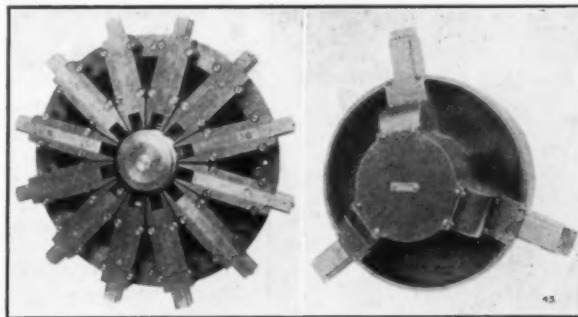
The section is then folded over toward the center on a hinge and each hinged side section is in turn folded, as shown in the view on the right. When the form is in this position the tire can be easily lifted from it without strain or distortion. (De Mattia Bros., Inc., Garfield, New Jersey.)

PNEUMATIC CHUCKS FOR TIRE-BUILDING MACHINES.

Air-operated chucks have recently come into use for holding the bases of solid tires and the cores of pneumatic tires during building operations.

The 12-jaw chuck shown on the left in the illustration is a special chuck designed for use in connection with a solid rubber tire-trimming machine. It will take tires from 28 to 36 inches in diameter, each of the jaws having a movement of over 4 inches. Owing to the narrow width of the small tires, it is necessary to make the chuck only 3½ inches wide on the outside diameter. The chuck has 12 jaws, which are necessary to avoid springing the tire ring out of shape, which is the main difficulty with a four-jawed chuck. All working parts are fully enclosed, making them dust-proof and eliminating danger to the workman.

The movement of the jaws is obtained through a rack-and-pinion movement that is operated by a 12-inch standard double-acting air cylinder. This chuck can also be made for external gripping by using false jaws.



AIR-OPERATED CHUCKS.

TWELVE-JAW CHUCK.

THREE-JAW CHUCK.

The three-jaw chuck shown in the illustration on the right is used on pneumatic tire-making machines and the interior construction is similar to that of the twelve-jaw chuck. It has a range from 17 to 24 inches, to accommodate regular-sized cores. These chucks are operated by a standard 10-inch double-acting air cylinder. The three-jaw chuck can also be used on tire-building stands, there being four chucks to each stand. (American Pneumatic Chuck Co.; Neidow & Payson Co., 9 South Clinton Street, Chicago, Illinois, general sales agents.)

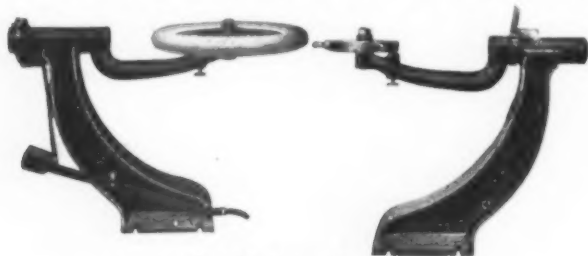
P. I. W. TIRE-BUILDING STANDS.

Both of these stands are built alike, with the exception that the ratchet holding the arm in position is operated by a foot-lever on one machine while the other is hand-controlled.

The spider revolves on a turned shaft, riveted into the arm, and is provided with three adjusting screws capable of accommodating cores for any size of tire from 28 to 44 inches in diameter. The ratchet catch on the spider is reversible, enab-

ling the operator to work on either side, or it may be thrown out, permitting the spider and core to turn freely.

The lever system on the foot-operated stand is made of bar steel, counterbalanced with a weight, thus doing away with springs and the inconvenience they cause. The lever can be changed from the right to the left by reversing the connecting rod and attaching the foot lever to the lug on the opposite side



TIRE-BUILDING STANDS.

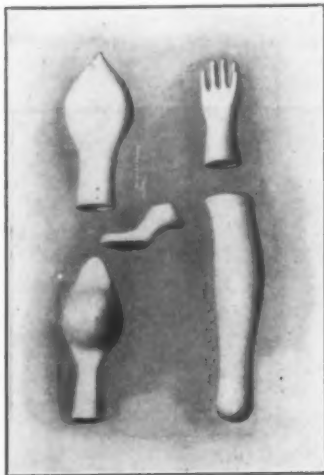
FOOT-OPERATED.

HAND-OPERATED.

of the stand thus permitting the operator to work on either the right or left side of the stand. (Pechstein Iron Works, Keokuk, Iowa.)

PORCELAIN FORMS FOR DIPPED GOODS.

The forms used in the manufacture of dipped goods are now largely made of porcelain and require specialized knowledge in order to produce an article that will be satisfactory in every respect.



PORCELAIN FORMS.

(The Colonial Sign & Insulator Co., Akron, Ohio.)

The difficulty with an ordinary porcelain form is its liability to craze after being in use for some time. This objection, however, has been finally overcome and vitreous forms are now made that will withstand the steam or acid cure without crazing. They are supplied in the proper size and are easy to maintain in a cleanly condition.

Forms for rubber gloves, finger-cots, nipples, toy balloons, and in fact almost any special shape used in the dipped rubber goods business can be made of porcelain.

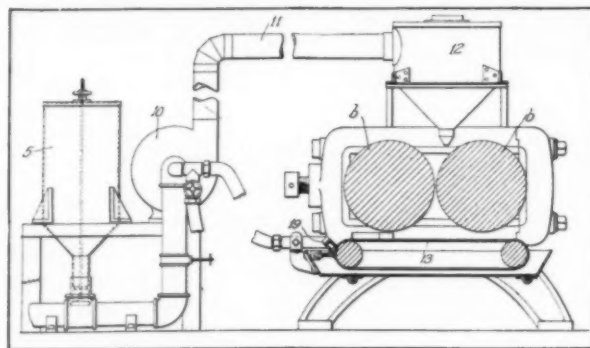
MACHINERY PATENTS.

APPARATUS FOR FEEDING COMMINUTED MATERIALS TO MIXING-MILLS.

THIS machine feeds powdered ingredients to a mixer and collects and returns to the mill surplus material until all of the charge has been worked into the rubber.

The materials are contained in the hopper 5 that discharges by gravity into a pipe line 6, to which other material hoppers may be connected. The fan 10 forces the materials that are deposited in pipe 6, through pipe 11 to a hopper 12, from which the discharge falls on one of the rolls b.

The surplus powder that falls between the rolls is collected in the center of an endless belt 13 and is drawn through nozzle 19 by suction of the fan, back to the upper part of pipe 6 and again delivered to the hopper 12. (William Jameson, assignor



DRY POWDER FEEDER FOR MIXERS.

to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,302,053.)

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- NO. 1,301,148. Pressure bag for use in tire-casing vulcanization. M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.
 1,301,233. Electric repair vulcanizer. O. C. Dennis, Wilmette, Ill.
 1,301,431. Apparatus for retread vulcanizing. E. Harris, Los Angeles, Calif.
 1,301,721. Repair vulcanizer. I. E. McElroy and L. Risk, Minneapolis; said McElroy assignor of his right to C. H. Rogers, St. Paul—all in Minnesota.
 1,302,122. Tire-making machine. L. P. Arnold, Norwalk, Conn.
 1,302,484. Machine for extruding rubber, etc. J. Stratton, Bowden, and E. A. Claremont, High Legh—both in England.
 1,302,660. Machine for making pneumatic-tire flaps. E. G. Hulse, Akron, Ohio, assignor to Kelly-Springfield Tire Co., Jersey City, N. J.
 1,303,256. Tire core. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, Ohio.
 1,303,485. Machine for grooving and finishing tires. R. H. Keaton, San Francisco, Calif.
 1,303,492. Stock-rack for tire-building machine. C. Kuentzel, Youngstown, assignor by mesne assignments to The Goodyear Tire & Rubber Co., Akron—both in Ohio.
 1,304,995. Machine for making rubberized-fabric tubes and strips. J. T. Lister, Cleveland, O.

THE DOMINION OF CANADA.

- 190,462. Apparatus for vulcanizing rubber. The American Rubber Co., assignee of A. L. Comstock—both of Boston, Mass.
 190,466. Apparatus for manufacturing rubber boots. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of C. J. Randall, Naugatuck, Conn.

THE UNITED KINGDOM.

- 124,277. Apparatus for molding butt-ended tubes. Dunlop Rubber Co., C. Macbeth, and R. H. Cunningham, 14 Regent street, Westminster.
 124,365. Machine for converting strip rubber into tubular form for inner tubes, including means for cleaning off chalk, etc. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, O., U. S. A.)
 124,585. Apparatus for applying hard rubber layer to foundation band of solid tires. Dunlop Rubber Co., C. Macbeth, and E. Sullivan, 14 Regent street, Westminster.

THE FRENCH REPUBLIC.

- 489,188. Apparatus and process for waterproofing threads, fabrics, and fibrous materials. A. O. Tate.
 489,277. Improvements in the manufacture of cellular tires. J. C. Anderson.
 489,431. Improvements in the apparatus and process for manufacturing pneumatic tire casings. J. M. Gilbert.

PROCESS PATENTS.

THE UNITED STATES.

- NO. 1,301,955. Manufacturing fabric for gasbags of airships, balloons, etc., by coating with vulcanized rubber, French chalk, and lining with goldbeaters' skin, etc. James McKechnie, Barrow-in-Furness, assignor to Vickers, Limited, Westminster—both in England.
 1,302,125. Forming elastic fabric with curved edge. S. T. Metz, Brooklyn, N. Y., assignor to Victory Corset & Girdle Co., Inc., a New York corporation.
 1,302,405. Construction of pneumatic tire casing. W. L. Mitten, Davenport, Ia.
 1,304,694. Manufacture of strand fabric. M. A. Marquette, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Massachusetts.
 1,304,909. Vulcanizing tires. F. T. Roberts, assignor of one-half to R. H. Rosenfeld—both of Cleveland, O.

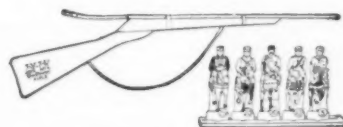
THE UNITED KINGDOM.

- 6,698. Strengthening airplane fabrics with lining of waterproofed fabric. Portadown Weaving Co. and T. J. Greeves, Annagh Factory, Portadown, County Armagh. (Not yet accepted. Appendix to abridgments of specifications, 1915.)

New Goods and Specialties.

A RUBBER-OPERATED RIFLE.

Boys playing at soldiering always enjoy a rifle. The one shown here looks enough like the regulation Army one to satisfy, besides shooting actual bullets—made of harmless soluble material which will not injure even if swallowed. There



JOY-TOY WINDTASTER RIFLE.

is a flexible rubber tube extending backward from the breech-end of the barrel, terminating in a sanitary glass mouthpiece, and the "bullets" are slipped into an opening at the breech end. This toy may be had either with or without a target of five cut-out horse-men mounted on hinged supports. (The Evanston Supply Co., 118 North La Salle street; C. J. Van Houten & Zoon, distributors, 140 South Dearborn street—both in Chicago, Illinois.)

HARD-RUBBER RADIO RECEIVER.

A new type of radio receiver, named "Murdock" for its manufacturer, is made from hard rubber composition and bakelite. It is said to be unusually sensitive and therefore dependable. It is held in place by an adjustable head-piece of metal which is divided into two parts that may be spread away from each other or used close together to suit the contour of the operator's head. (William J. Murdock Co., Chelsea, Massachusetts.)



"MURDOCK" RADIO RECEIVER.

"SEALTITE" PATCHES.

A tire-repair patch that will permit the user to apply it and immediately use the mended tire has been devised. It is self-vulcanizing and requires only a little cement for its application after the surface around the puncture or blow-out has been buffed. It is reinforced with fabric, making a strong, tight-holding mend. (The Federal Rubber Co., of Illinois, Cudahy, Wisconsin.)

A WAR-DEVELOPED EXCLUDER.

The demands of war have given an impetus to many novelties in footwear, or at least to the production of distinctive varieties from previous standards. One of these is the two-buckle style of arctic shown here. The upper is of fine black cashmerette, while the sole and foxing are of gray or white



THE ARMY EXCLUDER.

rubber, the heel being reinforced at the back. This has a wide folded tongue reaching to the top, which keeps out snow, slush and water as effectively as a rubber boot. This is named the "Army" excluder by the company which made many thousand cases of footwear for Canadian field troops during the war. (Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.)

A HIGH-GRADE BATHING CAP.

A bathing cap which attracts because of its good quality as well as because of its practicability is illustrated below. It is one of the many bathing-cap developments of the present season that has not been set aside for something better. It is made of pure rubber, gray in color, with a surface mottling for decoration. It has ear-tabs to keep out the water and keep the hair dry, and a chin-strap to hold it in place. This strap is held by a white enameled snap-fastener.



"AVIATION" BATHING CAP.

The picture here shows a man wearing the cap, but it is made in larger sizes for women. Those who dive will appreciate its practicability. (The Miller Rubber Co., Akron, Ohio.)

RUBBER BATHING ACCESSORIES.

One set of new bathing accessories (Stern Brothers, 60 West 42nd street, New York City) included a cape, parasol and beach cushion of red rubber, worn with a red rubber cap. The parasol was square-pyramid shape and the beach cushion was square. All were decorated with flights of birds painted on with black waterproof paint, touched with colors. The edges of the cape and its collar, and of the parasol, and cushion were finished with a wide double fold of rubber, slashed to make loop fringe.

Another set (Saks & Co., Sixth avenue and 34th street, New York City) was composed of a cape, cap, parasol, bathing-suit bag, and beach cushion. These were made of rubberized navy-blue fabric with a white polka-dot design. The cape had a close-fitting shoulder-yoke with scarf extensions, of red rubber, cemented to the body.

The Tam-O'Shanter cap had squares of blue checked off with red at its edge, and a red rubber tassel. The parasol, bag, and cushion were edged with narrow slashed fringe. The bag was of the new type, full, gathered to a wide top. This set was worn with a suit of navy-blue satin.



A NOVEL BALL.

A rubber ball that should delight the little folks has recently been patented, which comprises some unusual features.

Over an ordinary rubber ball on which are painted two grotesque faces, are two semi-spherical caps vulcanized to the top and bottom of the ball but free elsewhere. When these are turned back, as shown in the illustration, the faces are revealed. At the juncture point of one of these caps a long rubber thread is attached, by means of which the toy can be used as a return ball. When a toss ball is desired, the thread is wound up inside the cap. With the caps open, the thread is wound around the juncture point, forming a sort of collar. (C. Otis Griffin, New Bern, North Carolina.)

THE GRIFFIN RUBBER BALL.

GOLF BALL WITH RUBBER-WOUND CORE.

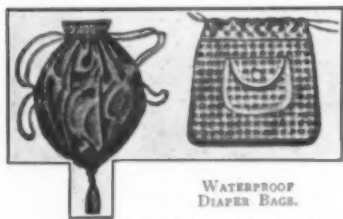
Another new golf ball claims to be "different" in the manner of winding the rubber thread around the core. This, it is said, gives the ball liveliness. Control on approach is also claimed for this ball because of its pitted cover. It is conducive to surer putting, and the ball is not swerved by wind pressure. The fixed center of gravity makes the ball hug the green closer and roll steadily and surely, although it lifts easily and with certainty because the club grips it so well. (Thos. E. Wilson & Co., 701 North Sangamon street, Chicago, Illinois, and 25 West 45th street, New York City.)



"SUCCESS" GOLF BALL.

RUBBER-LINED AND RUBBERIZED BAGS.

The two bags shown in the accompanying illustrations are intended to be used to carry diapers, but could be used as well for bathing-suit bags. The one on the left is of black sateen and has a silk draw-cord at the top and a silk tassel at the bottom. It is fitted with a removable waterproof bag inside, held in place by snap fasteners at the top. This bag is fourteen inches long, but weighs only a few ounces. The bag on the right is made of double-faced rubberized cloth and has two sections besides a pocket on the outside. It is checked in black and white. (Montgomery Ward & Co., Chicago avenue and Larrabee street, Chicago Illinois.)

WATERPROOF
DIAPER BAGS.**A NEW USE FOR SPONGE RUBBER.**

The writer recently found in a Western drug store a shaving "brush" of sponge rubber—a simple contrivance, yet effective and eminently useful. A cylindrical piece of sponge rubber about two inches in diameter and a little more than that in length, was compressed at one end and tightly embedded in an enameled wood handle. The other end of the sponge flared out in conical shape with rounded base. This formed a shaving-brush, both for applying soap or cream, and for rubbing it in to soften the beard.

This is a simple article, easy to manufacture, inexpensive enough to sell well at a small price. No maker's name appears on it, nor is there any mark to show it was ever patented. It would seem to be a good article for the novelty manufacturer.



SPONGE RUBBER SHAVING-BRUSH.

TESTBESTOS BRAKE LINING.

A new kind of brake lining is called "TESTBESTOS." It is manufactured from extra long asbestos fibers woven and interwoven in strong brass mesh and impregnated with sufficient rub-

ber to bind it properly. This brake lining is made in widths from one to four inches by quarter-inches and in five thicknesses from one-eighth-inch to five-sixteenths. (American Asbestos Co., Norristown, Pennsylvania.)

"UNIVERSAL" LIFE-
SAVING SUIT.**A SUIT FOR LIFE-SAVING.**

Among the many articles whose production was particularly stimulated by the recent war is the life-saving suit of many kinds, some odd but interesting, and many intensely practical. One of the newer ones is illustrated here. It is made of rubberized material which is nevertheless sufficiently soft and pliable to allow freedom of movement. No air cells are used, but the garment gets its buoyancy from a lining of kapoc such as is used in government life-preservers of the ordinary type.

It is claimed that in this suit the wearer can swim, recline, or float on the water, and even sleep. It can be folded up compactly and takes less than a minute to put on over the usual clothing. It is made in sizes for men, women and children. (G. H. Masten Co.)

A TRADE-MARKED BLOW-OUT PATCH.

The manufacturer of a blow-out patch so successful that it was widely imitated, devised the scheme of marking his product with a trade-name. This is why the "Major" appears under its own name. Just as the title of his rank distinguishes the army officer, so the blow-out patch which is dignified with a name is easily identifiable and procurable. It is said in behalf of this patch that it will not bulge through the blow-out in the casing and become road-cut. (The General Tire & Rubber Co., Akron, O.)



THE "MAJOR" PATCH.

A NEW FABRIC TIRE.

A new fabric tire, made with long-fiber Sea Island cotton in its carcass, has an extra thick tread and a white, thick sidewall which gives it a neat appearance as well as materially increasing its strength. The wall cushion extends through to the beads, which are anchored by a chafing strip so wide that it reaches up into the side-walls.

The extra width of the chafing strip is said to give increased flexibility to the sides, add a tensile strength of two hundred pounds to the inch, and stiffen the grooves, at the same time eliminating rim-cuts.

Breaker strips of additional width are also used in this tire, thereby minimizing the danger from separation of plies and eliminating stone-bruises. (The Gates Rubber Co., Denver, Colorado.)

GATES "DOUBLE-
MILEAGE" TIRE.**THE "ERCO" WAR-SOLE.**

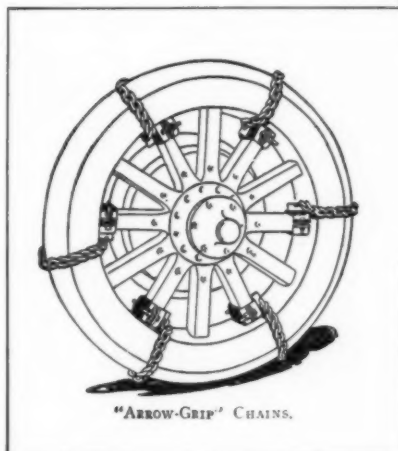
A new rubber and fiber sole brought out during the war is called the "ERCO." It is said to give very satisfactory wear. (Essex Rubber Co., Trenton, New Jersey.)

Tire Accessories.

A SIMPLE NON-SKID CHAIN.

A SIMPLE NON-SKID CHAIN which is easily and quickly adjusted is shown in the illustration below. It fits the tire, because it is made in different sizes in order to accomplish this, and it has no special connectors or links, so that it is easily replaced. Any standard cross chain can be used in an emergency until the "Arrow Grip" can be obtained.

The special feature of this accessory is the clamp by which it is attached. This clamp is attached to the spoke of the wheel and is lined with rubber so that it cannot injure the spoke. Once



"ARROW-GRIP" CHAINS.

sary. The hook to which the chains are fastened is integral with the clamp and the latch when once pressed down cannot open accidentally. The clamp is rust-proof and no special tools are required to attach or detach it. The chain is twisted so that it lies flat on the tire, and the pull is on the felloe, not on the spokes or clamp. No jacking up of the truck is required. (Arrow Grip Manufacturing Co., Inc., Glens Falls, New York.)

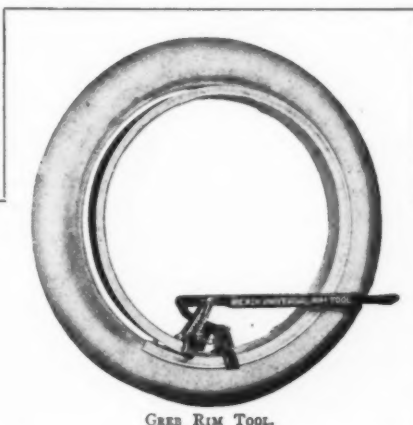
A PROTECTOR AGAINST PUNCTURES.



"HIGHWAY" TIRE PROTECTOR.

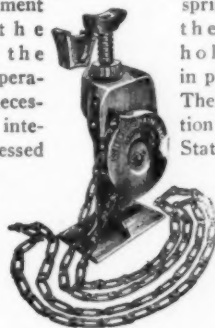
grade steel studs. These tire protectors, in addition to guarding against punctures, keep the car from skidding in sand and on muddy roads. They fit easily over the tire and do not wear

it out, because a strip of leather is cushioned between the tire tread and the protector. The openings between the sections permit sand, mud, gravel, and water, to escape. The device is light in weight. (The Bukolt Manufacturing Co., Stevens Point, Wisconsin.)



GREB RIM TOOL.

fitted, it can remain permanently, making the attachment of the chain the only operation necessary.



WEED CHAIN JACK.

ing the rim. The lever swings by center and the spring of the rim holds it in position. The operation is reversed for replacing tires. (The Greb Co., 165 State street, Boston, Massachusetts.)

A RIM-TOOL FOR SPLIT RIMS.

A rim-tool that fits all sizes and types of transversely split rims is practical and useful. The one shown here is made to spread a rim one-quarter of an inch when required, as well as to raise one end two inches and carry it four inches over and by the other, thereby contract-



"JIFFY" COLLAPSIBLE RIM.

THE "JIFFY" RIM.

A rim that can be collapsed simply by dropping on the floor or road is this one which has a toggle joint, rust-proof, with no springs or hinges to get out of order. No tools are necessary. The collapsible section is about fourteen inches in length when collapsed. (Parker Collapsible Rim Corp., Chicago, Illinois.)

SIMPLY OPERATED CHAIN-JACK.

A chain-jack operated by pulling chain in either direction. (American Chain Co., Bridgeport, Connecticut.)



"ARMORCORD" INNER TUBE.

"ARMORCORD" TUBE.

An inner tube that strengthens the tire is of cords embedded in rubber, so arranged that while the outer surface expands, the inner one contracts lengthwise, preventing creeping. (Armorcord Rubber Co., Salem, Ohio.)

THE EDITOR'S BOOK TABLE.

COURSE IN MODERN PRODUCTION METHODS. BY JOHN CALDER and associates. Business Training Corp., New York City. (Six volumes, cloth, 16mo., 125 to 150 pages.)

THE manager, the superintendent and the foremen of an industrial plant, who would fill their positions efficiently, must know vastly more than those occupying similar positions a decade or two ago. However, much practical experience they may have had in attaining to such offices, there are many points, the results of other experiences, which are really essential. These six volumes are the results of such experiences, so put together as to be a course in practical training. The books are arranged under the general subjects of Teamwork, Handling Men, organization, Machinery and Materials, Production Records and Management. Each of these broad subjects is considered in its various phases in clearly written style interestingly illustrated, and the man in shop or office, whatever his rank, who may thoroughly and conscientiously study and master the six volumes must be far better fitted to do the work now required of him, and well-qualified for promotion.

NEW TRADE PUBLICATIONS

AS A SAMPLE OF A WORKING CATALOG, THE ONE RECENTLY SENT out by the Allen Machine Co., Erie, Pennsylvania, is worthy of high commendation. This gives, each on a page by itself, fine half-tones from retouched photographs of the various rubber-mill machines manufactured by the company. These include calenders, mixing mills, washers, presses, accumulators, tubers, strainers, vulcanizers, etc., shown in large size and careful detail on the left-hand pages, with full-descriptions on the page opposite. The book has a heavy, embossed cover, the typography and press work being a fine example of the printer's art.

THE TAYLOR INSTRUMENT COMPANIES OF ROCHESTER, NEW YORK, have issued a valuable reference work in their general industrial catalog of Tycos instruments. The book is a well-made cloth-bound volume (7 by 10 inches) of 422 pages, handsomely printed and illustrated with half-tones, diagrams, charts and blueprints showing the application of Tycos instruments and system of regulation of time, temperature and pressure in various industrial operations. The volume also contains a section devoted to tables for ready reference on temperature, relative humidity, steam, specific gravity equivalents, etc., concluding with an excellent general index.

THE DENHAM COSTFINDING CO., CLEVELAND, OHIO., IS MAILING gratis to general managers of factories a neat little 105-page, cloth-bound book by Robert S. Denham, entitled "The A-B-C of Cost Engineering." It outlines the principles and advantages of the newest and most practicable methods of determining the cost of producing and selling factory-made goods and explains the special merits of the Denham cost engineering systems.

THE KEYSTONE TIRE & RUBBER CO., NEW YORK CITY, IS MAILING a very large and striking circular, which might well serve as a window poster. Half-tone illustrations of the various steps in making tires by hand, a picture of a tire, fully half actual size, a trade-mark in vivid red, all combine to make a piece of trade literature which cannot escape attention.

A NEW MAP OF ASIA SHOWING, AMONG OTHER THINGS, THE rubber resources of the country, has been published by the Asia Publishing Co., 627 Lexington avenue, New York City. In addition to the information generally given by political maps, this one includes designation of railroad systems, caravan routes, which may later be followed by railroads, and the economic resources, rubber being only one of the products represented.

AN INDUSTRIAL MAP OF NEW ENGLAND, INDICATING BY A KEY THE leading industries located geographically in the respective cities and towns, has been published by The First National Bank, Boston, Massachusetts. In addition there is a carefully worked out table of the industrial towns arranged by states, the leading industries in each city and town being indicated.

The map will be published in other languages for distribution in the foreign markets of the world to enable the foreign buyer to familiarize himself with New England manufactured products.

NEW INCORPORATIONS.

A. G. G. Tire & Rubber Co., Inc., The, May 29 (New York), \$250,000. A. Gerace, Buffalo; F. and C. Lombardo, both of Jamestown—both in New York. Principal office, Buffalo, New York. To manufacture tires, etc.

Aldens Successors, Inc., June 13 (New York), \$100,000. T. A. Maguire, president and treasurer; A. H. Brown, vice-president and assistant treasurer; M. A. Howser, secretary; W. C. Martin, assistant secretary; E. T. Rice, J. French, and J. Cone, directors. Principal office, 290 Broadway, New York City. To import crude rubber and general merchandise.

American Balloon Co., Inc., June 9 (New York), \$2,000. S. I. Sing, E. K. Walker, both of Forest Hills, Long Island, New York; G. C. Hall, Akron, Ohio. To manufacture rubber balloons.

American Thermosuit Corp., May 2 (New York), \$500,000. E. T. Rickford, Whitman, Massachusetts; C. V. Stehle, 120 Broadway; J. Romano, 612 West 178th street—both of New York City. To manufacture life-saving suits.

Beacon Tire & Rubber Co., June 7 (Delaware), \$1,000,000. R. W. Crissey, R. E. Moore, both of Kent, Ohio; J. R. Riley, Pittsburgh, Pennsylvania. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture inner tubes, tires, etc.

Biltwel Tire Corp., May 6 (Massachusetts), \$50,000. J. D. Rudnick, 74 Elm Hill avenue; H. A. Rudnick, 68 Brunswick street—both of Roxbury; D. R. Silverman, 16 Charlotte street, Dorchester—both in Massachusetts. Principal office, Boston, Massachusetts. To manufacture, buy, sell, rebuild and repair rubber tires and tubes.

Carlton Tire & Rubber Co., Inc., June 16 (New York), \$25,000. F. G. Carlton, Woolston, Massachusetts; I. Rapoport, 1660 Union street; A. A. Matthews, 149 Sterling street—both of Brooklyn, New York. Principal office, Brooklyn, New York.

Charlotte Tire & Rubber Co., Inc., June 18 (New York), \$4,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires, etc.

Chelsea Tire & Repair Co., June 3 (New Jersey), \$10,000. N. E. and J. J. Daily, both of 7 North Boston avenue, Atlantic City, New Jersey; E. F. White, 1401 West Third street, Chester, Pennsylvania. Principal office, 3007 Atlantic avenue, Atlantic City, New Jersey. Agent in charge, N. E. Daily. To repair tires.

Chester Waterproof Co., Inc., June 13 (New York), \$20,000. G. Shapiro, 1915 66th street, Brooklyn, New York; T. Crawford, 260 William street; J. Klein, 153 East 116th street, both of New York City. To manufacture raincoats, etc.

City Tire Co., Inc., May 29 (New York), \$5,000. S. and A. Newman, 244 West 54th street; H. C. Specter, 1704 North Charles street—all of New York City. To manufacture tires.

Colonial Rubber Manufacturing Co., May 31 (New Jersey), \$100,000. J. Beiger, 228 First street, Town of Union; J. Gardner, 37 Bond Place, Weehawken—both in New Jersey; W. C. Michael, 439 Putnam avenue, Brooklyn, New York. Principal office, 75 Montgomery street, Room No. 150, Jersey City, New Jersey. Agent in charge, G. D. Hendrickson. To manufacture, purchase, and sell tires, tubes, rubber boots, and all goods of which rubber is a component part.

Conestoga Tire & Rubber Co., May 27 (Delaware), \$25,000. A. R. and W. W. Trump, R. Pryde—all of Lancaster, Pennsylvania. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To buy and sell automobile tires and tubes.

Cord Tire Corp., May 5 (West Virginia), \$500,000. J. D. Comstock, H. B. Wovelbury, H. J. Powers, J. T. Johnson—all of Chester, West Virginia; A. J. Comstock, 2668 Edgesshill Road, Cleveland, Ohio. Principal office, Chester, West Virginia. To manufacture and deal in rubber products.

Dayton Rubber Manufacturing Co. of New York, Inc., June 10 (New York), \$100,000. R. L. De Lisser, Great Neck; E. O. Machlin, New Rochelle—both in New York; W. P. H. Reilly, 248 West 102nd street, New York City. To manufacture tires, etc.

Doublewear Rubber Co., May 29 (New Jersey), \$125,000. C. P. Goldsmith, 24 West 36th street, New York City; L. and I. Cohen—both of 13 Perdicaris Place, Trenton, New Jersey. Principal office, 143-149 East State street, Trenton, New Jersey. Agent in charge, P. Forman. To buy, manufacture, sell, export, import and generally deal in rubber goods.

Dri-Kure Retreder Co., The, April 22 (Ohio), \$10,000. M. L. Cope, president; E. M. Harbin, vice-president; H. B. Houghton, secretary and treasurer; H. J. Cope, assistant secretary and treasurer; H. B. Houghton, Jr., director. Principal office, 405 East Market street, Akron, Ohio, branches at 80 Bagley avenue, Detroit, Michigan, and 5868 Baum Boulevard, Pittsburgh, Pennsylvania. To sell tire-repair machinery.

Economy Rubber Co., April 17 (Pennsylvania), \$90,000. G. P. Felty, Pittsburgh; E. E. Murphy, R. R. Yost, both of Johnstown—all of Pennsylvania. Principal office, Johnstown, Pennsylvania. To manufacture, sell and deal in rubber products, accessories and supplies.

Enterprise Tourist Case Co., Inc., January 9 (New York), \$50,000. J. J. Schulman, 619 West 143rd street; J. R. Korbet, 1562 Minford Place, Bronx; W. Abramson, 648 West 160th street—all of New York City. To manufacture traveling equipment and rubber products, etc.

Five-Fifteen Tire Vulcanizing Co., January 14 (Tennessee), \$10,000. J. G. Burkle, C. W. Fellows, H. B. Arnoult, E. A. Rome, D. F. Clark, F. J. Lawless. Principal office, Memphis, Tennessee.

Fordcord Rubber Co., May 23 (Maine), \$2,000,000. E. M. Leavitt, A. L. Fogg, E. L. McLean. Principal office with Williamson, Burleigh & McLean, Augusta, Maine. To deal in tires, etc.

G. H. G. Auto Tire & Supply Co., Inc., June 16 (New York), \$5,000. H. I. and M. Grundt, A. Henig—all of 1483 Fifth Avenue, New York City. To carry on auto tire business.

Gibraltar Tire & Rubber Corp., May 14 (Delaware), \$400,000. A. Watson, Nyack; R. Krause, Sound View avenue, Clason Point; M. A. Heyser, 446 Lexington avenue, Brooklyn—all of New York. Delaware agent, United States Corp. Co., 311 State street, Dover, Delaware. To manufacture and generally deal in tires.

Gillette Tire Co., Inc., June 2 (Delaware), \$50,000. F. R. Hensell, Philadelphia, Pennsylvania; E. M. MacFarland, J. V. Pimm, both of Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To import, export and manufacture automobiles, tires, tubes, etc.

Hercules Rubber Corp., May 27 (Delaware), \$1,000,000. E. H. L. Haefner, C. A. Stegner, both of Main and Canal streets; J. A. Robinson, 4th and Vine streets—all of Cincinnati, Ohio. Delaware Agent, Corporation Co. of Delaware, 901 Market street, Wilmington, Delaware. To deal in rubber products.

Hood Tire Shop, March 13 (Indiana), \$25,000. B. L. Heer, J. J. Carney, R. J. Diekemper—all of Terra Haute, Indiana. Principal office, Terra Haute, Indiana. To buy and sell automobile accessories.

Indiana Tire Co., The, February 27 (Indiana), \$50,000. D. K. Hall, R. M. Ingalls, J. W. Heckman, H. Dicks—all of Indianapolis, Indiana. Principal office, Indianapolis, Indiana. To buy and sell automobile tires.

Jackson-May Rubber Co., April 23 (Arkansas), \$50,000. R. May, president; V. L. Jackson, vice-president; J. D. Simpson, secretary and treasurer—all of Little Rock, Arkansas. Principal office, Little Rock, Arkansas. To manufacture rubber specialties.

Levy, Kelban & Co., Inc., June 19 (New York), \$2,000. B. Levy, 75 East 104th street; I. Kelban, 49 East 102nd street—both of New York City; S. Levy, 391 Kosciusko street, Brooklyn, New York. To deal in auto tires and accessories.

M. & M. Tire Service Co., Inc., May 29 (New York), \$5,000. E. C. Handwerck, W. G. Merowit, W. J. Bullion—all of Buffalo, New York. Principal office, Buffalo, New York. Tire service station.

Madison Tire & Rubber Corp., June 12 (New York), \$625,000. C. W. Smith, B. H. Macquhae, H. L. Kimberly—all of 30 East 42nd street, New York City. To manufacture tires, etc.

Milner Rubber Co., W. F. The, April 9 (Kentucky), \$10,000. W. F. Milner, R. H. and B. M. Rivers—all of Louisville, Kentucky. Principal office, Louisville, Kentucky. To buy, sell and repair automobiles and parts.

New Jersey Savold Tire Co., May 22 (New Jersey), \$2,000,000. H. A. Black, A. F. McCabe, J. R. Turner. Principal office, 15 Exchange Place, Jersey City, New Jersey. Agent in charge, The Corporation Trust Co. To manufacture, purchase, sell, import, export, rebuild and repair tires.

Phenix Tire Corp., June 5 (New York), \$5,000. R. H. Forbes, 153 East 24th street, New York City; T. F. O'Brien, 124 Martense street; T. Y. Brent, 2181 Bedford avenue—both of Brooklyn, all in New York. Principal office, Brooklyn, New York. To manufacture tires.

Pierces Tire Co., Inc., June 7 (New York), \$5,000. H. L. Lewen, 60 West 129th street. C. Pechner, 299 Broadway; S. Weininger, 734 East 160th street—all of New York City. To manufacture tires.

Pressman Tire & Rubber Co., May 27 (Delaware), \$3,000,000. T. L. Croteau, P. B. Drew, C. L. Rimlinger—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To buy, sell and generally deal in rubber tires, tubes, etc.

Rainbow Tire & Rubber Co., February 5 (Ohio), \$250,000. C. E. Ross, president; H. L. Gilbert, vice-president; G. E. Caylor, secretary and attorney; C. A. Morrison, treasurer; H. E. Fegley and C. A. Waggoner, directors. Principal office, 310 People's Loan Building, Delaware, Ohio. To do a general rubber business.

Redden Resilient Wheel Co., June 4 (Massachusetts), \$50,000. E. E. Redden, 101 Oakland street; P. J. O'Brien, Jr., 58 Belmont street; J. L. Connell, 17 Jenks street—all of Springfield, Massachusetts. Principal office, Springfield, Massachusetts. To manufacture and deal in automobile parts, accessories, etc.

Rialto Tire & Rubber Co., Inc., May 28 (New York), \$20,000. J. Jacobs, S. Bernheim, W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires, etc.

Rubber Products Corp., June 13 (Delaware), \$500,000. A. W. Britton, S. B. Howard, R. K. Histle—all of 65 Cedar street, New York City. Delaware agent, United States Corporation Co., 311 South State street, Dover, Delaware. To manufacture and deal in goods made entirely or partly of rubber.

Serber Rubber Co., Inc., The, June 11 (New York), \$20,000. D. C. and M. C. Serber, both of 1123 Broadway; L. A. Malkiel, 116 Nassau street—all of New York City. To manufacture tires, etc.

Smith Tire & Rubber Co., Inc., May 15 (New Jersey), \$100,000. F. W. Smith, L. A. Ely, both of Rutherford, New Jersey; J. R. Arbooz, New York City. Principal office, Ely Building, 5 Erie avenue, Rutherford, New Jersey. Agent in charge, W. H. J. Ely. To manufacture, buy, sell and deal in all kinds of rubber goods.

Standart Tire & Rubber Co., The, May 8 (Massachusetts), \$150,000. W. P. Cronin, Belmont; J. S. Waddell, Winchester, both in Massachusetts; S. Bernheim, New York City. Principal office, Boston, Massachusetts. To manufacture and deal in automobile tires, rubber goods, etc.

Stanley Tire & Rubber Corp., May 24 (New York), \$50,000. H. A. Cohn, 300 East 49th street, New York City; S. Fischel, 891 Fox street, Bronx; R. Heller, 1431 60th street, Brooklyn—all in New York. To manufacture tires, etc.

Universal Rubber Products Co., May 26 (Delaware), \$2,000,000. T. L. Croteau, P. B. Drew, C. L. Rimlinger—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture tubes, tires and rubber goods.

Uzold Tire Corp., June 7 (Delaware), \$5,000,000. W. F. O'Keefe, G. G. Stiegler, J. H. Dowdell—all of Wilmington, Delaware. Delaware agent, Corporation Co. of Delaware, 901 Market street, Wilmington, Delaware. To manufacture and deal in automobile tires, tubes, etc.

Wayne Tire & Rubber Co., May 19 (Delaware), \$600,000. H. R. Platt, E. C. Love, C. A. Wier—all of Orrville, Ohio. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture automobile tires, tubes, etc.

Weston Wheel Corp., June 10 (New York), \$5,000. F. G. Fischer, 900 Riverside Drive, C. F. Bailey, 226 Loring Place, both of New York City; W. S. Sawyer, 60 Berkeley Place, Brooklyn, New York. To manufacture auto wheels.

Yale Tire & Rubber Co., April 29 (Connecticut), \$500,000. J. E. Hubinger, C. W. Murdock, G. P. Smith—all of New Haven, Connecticut. Principal office, New Haven, Connecticut. To manufacture tires.

SPAWNING TIRE COMPANIES.

With headquarters in New York City, a group, perhaps two or three groups, have within the last six months incorporated some forty tire companies, probably more. This does not necessarily mean forty new factories, nor does it mean—in fact, just what is the idea? The list, the capitalization and the names of the incorporators is, however, illuminating to a degree.

One group consists of J. Jacobs, S. Bernheim and W. Loewenthal, all of 1877 Broadway. They are incorporators of the following companies during the last few months:

Arch City Tire & Rubber Co., Inc., capital \$5,000.
Arrow Tire & Rubber Co., Inc., \$15,000.
Charlestown Tire & Rubber Co., Inc., \$6,000.
Charlotte Tire & Rubber Co., Inc., \$4,000.
Cotton States Tire & Rubber Co., Inc., \$10,000.
Ellison Tire & Rubber Co., Inc., \$10,000.
Great Western Tire & Rubber Co., Inc., \$20,000.
Huguenot Tire & Rubber Co., Inc., \$3,000.
Oval Tire & Rubber Co., Inc., \$4,000.
Rialto Tire Rubber Co., Inc., \$20,000.
Stapleton Tire & Rubber Co., Inc., \$4,000.
Tennessee Tire & Rubber Co., Inc., \$5,000.
Union Hill Tire Sales Station, Inc., \$4,000.
Valley Tire & Rubber Co., Inc., \$2,000.
West Gate Tire & Rubber Co., Inc., \$5,000.

The other group includes H. S. Hartstein, C. A. Weldon, A. Hirsch, S. Bernheim and M. Kittay, all of 35 Nassau street, New York City. Some three of these five are incorporators of the following companies:

Bridgeport Tire & Rubber Co., Inc., \$2,000.
Boston Tire & Rubber Co., Inc., \$4,000.
Bayonne Tire & Rubber Co., Inc., \$2,000.
Central New York Tire & Rubber Co., Inc., \$20,000.
Connecticut Tire & Rubber Co., Inc., \$2,000.
Davenport Tire & Rubber Co., Inc., \$1,000.
Capitol Tire & Rubber Co., Inc., \$2,000.
Columbus Tire & Rubber Co., Inc., \$5,000.
Erie Tire & Rubber Co., Inc., \$3,000.
Essex Tire & Rubber Co., Inc., \$4,000.
Elmira Tire & Rubber Co., Inc., \$2,000.
Fair Tire & Rubber Co., Inc., \$5,000.
Fresno Tire & Rubber Co., Inc., \$5,000.
Gem Tire & Rubber Co., Inc., \$5,000.
Jamaica Tire & Rubber Co., Inc., \$2,000.
Lion Tire & Rubber Co., Inc., \$1,500.
Missouri Tire & Rubber Co., Inc., \$5,000.
Newburgh Tire & Rubber Co., Inc., \$1,500.
Norfolk Tire & Rubber Co., Inc., \$1,000.
Newark Tire & Rubber Co., Inc., \$4,000.
Paterson Tire & Rubber Co., Inc., \$2,000.
Palace Fire & Rubber Co., Inc., \$3,000.
Reading Tire & Rubber Co., Inc., \$4,000.
Raleigh Tire & Rubber Co., Inc., \$2,000.
Schenectady Tire & Rubber Co., Inc., \$3,000.
Saxet Tire & Rubber Co., Inc., \$2,000.
Tire Export Co., Inc., \$2,000.
Watertown Tire & Rubber Co., Inc., \$50,000.
Wilmington Tire & Rubber Co., Inc., \$1,000.
Williamsburgh Tire & Rubber Co., Inc., \$3,000.
Yonkers Tire & Rubber Co., Inc., \$3,000.

Looking farther back, we find quite a number of other companies whose incorporators are S. Bernheim, C. A. Weldon and H. H. Jacobson, the address of the latter being 373 or 555 Grand street, Brooklyn, New York. Among these may be mentioned:

Blacklock-Posner Tire Co., Inc., \$15,000.
Boston Tire & Rubber Co., Inc., \$4,000.
Colorado Tire & Rubber Co., Inc., \$1,000.
Chicago Tire & Rubber Co. of America, Inc., \$100,000.
Commercial Tire & Rubber Co., Inc., \$1,000.
Delta Tire & Rubber Co., Inc., \$1,000.
Elm City Rubber Co., Inc., \$1,500.
Equitable Tire & Rubber Co., Inc., \$1,000.
Fulton Tire Corp., \$200,000.
Government Tire & Rubber Co., \$2,400.
Leader Tire & Rubber Co., Inc., \$5,000.
Pacific Tire & Rubber Co., Inc., \$2,000.
Quality Tire Co., Inc., \$1,000.
Queen City Tire & Rubber Co., Inc., \$1,000.
Service Tire & Rubber Co., Inc., \$1,000.
Sea Gate Tire & Rubber Co., Inc., \$12,000.
Syracuse Tire Co., \$10,000.
Tire Company of Baltimore, Inc., \$100,000.
Tire Company of California, Inc., \$7,500.
Tire Company of Philadelphia, Inc., \$6,000.
Tire Outlet Co., Inc., \$1,000.
World Tire Corp., The, \$3,000.

Besides these there are some others in which one or more of the names of individuals mentioned above appear as incorporators.

From Rubber Planters in Mexico.

Letters to the Editor.

"I SOMETIMES WISH that the American rubber trade could have been with you in 1903, 1904 and 1905 when you visited Mexico, examined the plantations, and studied conditions. Could they, for example, have been crowded into the little launch that went up the Coatzacoalcos river, then up the Usapa-apa and finally entered the Chichigapa, landing at the long river pier at Plantation Rubio. Then after luncheon the whole party to take horse and ride for hours through the miles of rubber trees, visiting the villages of thatched houses, put up for the hundreds of laborers, viewing the substantial storehouses, together with the bungalows of the superintendent and foremen; they certainly would have been impressed, not only by the enterprise shown in the clearing and planting of thousands of acres of jungle but they could not but note how prosperous and contented were the workmen and their families. There would also have come to them the feeling of safety that we all had under the protection of Diaz and incidentally Uncle Sam!

"Had they taken that trip I could wish that they might take it again to-day. To be sure, the launch would afford a good target for bandit snipers along the river banks and would need to be armored. Over at Rubio the charred and rotting remains of the long pier might help one to flounder up to the site of the once tiled and brick *bodega*. Then up to the main road now choked with jungle growth, to the plantation where stood the administration settlement. Here would be seen destruction, wanton and complete—homes burned to the ground or dismembered and wrecked beyond description. Possibly they would wish to visit the graves of young Saenz and two other American white men killed by bandits because they tried to protect the property of their American employers. It would hardly be safe to visit the rubber plantings but could they do so they would find trees



BODEGA DESTROYED BY BANDITS.

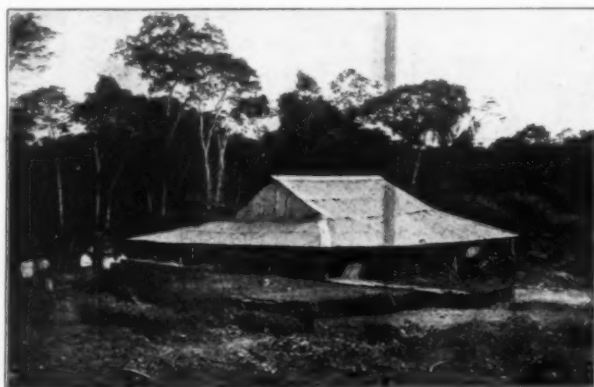
slashed and burned and the choking jungle growth covering everything. Of all the old order nothing remains—all is changed, except the collection of taxes. This goes right on, and perhaps will result in final confiscation.

"This of course would be but one example. It could be duplicated many, many times had the visitors the heart for such inspection. Diaz is dead, God rest him, and Uncle Sam sleeps!

Uncle Sam sleeps almost as soundly as scores of young Americans, whose graves dot the once prosperous plantations of the *tierra caliente*."

DESTRUCTION OF HEVEA TREES.

"As I have before indicated—I believe 50 per cent of the rubber plantations in Mexico, by adding cattle, corn and the like, would to-day be on a paying basis if they had been protected.



BRICK AND TILE FACTORY BURNED BY BANDITS.

But banditry prevailed, the workmen were driven away or forced into the army, and property destroyed in all directions. Americans left, those who could, and it seems hopeless to try to do anything. It is a shame, a shame that has continued for years.

"I do not suppose many know it but the experiments with the *Hevea* tree in Mexico proved that it would do just as well as in the Far East. Under fair conditions there should have been thousands of acres now in bearing. It would have meant the financial salvation of scores of American planters in Mexico. But the *Hevea* trees have been practically wiped out through forced neglect or wilful destruction.

"I might add that the American planter was a godsend to the Mexican laborer. *Hevea* plantations or any successful plantations meant food, clothing and schooling to a people sadly in need of all three. It also meant added revenue to a bankrupt government."

RUBBER FOOTWEAR SCHOOL.

Factory training under direct supervision and upon a production basis has proved eminently satisfactory for two years past in teaching the rudiments of rubber footwear construction in a leading American factory employing 8,500 persons, approximately 50 per cent of whom are women engaged upon the manufacture of rubber footwear. Learners remain in this school two weeks, or until they are able to produce 60 pairs a day. While in training they are paid \$10 per week, or if they are able to turn out a "full ticket" of 102 pairs, they receive \$16.50 per week. When transferred to the shoe-working department they are put upon a piece-rate basis.

Numerous pamphlets of value to those interested in various methods of industrial training have been published by the Department of Labor and may be had on application to the United States Training Service, 618 Seventeenth street, N. W., Washington, D. C.



Rubberizing Munitions

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News of the American Rubber Industry.

GENERAL MANAGER AND SECRETARY OF THE RUBBER ASSOCIATION.

ALBERT L. VILES, who becomes general manager and secretary of The Rubber Association of America on July 1, is of English ancestry, and was born at Orland, Maine, December 20, 1881, and here he passed his boyhood days. He



ALBERT L. VILES.

attended the country school in that town, but his parents removing to Dover, New Hampshire, he continued his education at the Dover public schools.

His first employment was in the woolen mills, at Dover, and later in Auburn, New York. But his ambition was to be a railroad man, and in 1901 he entered the employ of the Lehigh Valley railroad as a laborer. Determined to succeed, he rose from one position to another, becoming telegrapher, station agent, accountant, assistant chief clerk in superintendent's office, ticket agent and freight agent.

In 1910 he accepted the position of investigator with the Official Classification Committee of the railroad lines east of the Mississippi river and subsequently became special agent and assistant to the chairman, specializing in commercial analysis of all lines of business throughout the Official Classification Territory in so far as related to freight classification. He prepared, presented and defended cases of the Interstate Commerce Commission and also engaged in special investigation work for various member railroad lines in the Official Classification Territory.

In August, 1918, he was called to become manager of the Tariff Division of The Rubber Association of America, Inc., which position he filled most efficiently until last April, when he resigned to become assistant manager of the Eastern Freight Inspection Bureau, United States Railroad Administration, in charge of freight inspection in Official Classification Territory. It is this position which he relinquished to become general manager and secretary of The Rubber Association.

He is a member of the Transportation Club and the Traffic Club, both of New York City, and also of the B. P. O. Elks.

DIVIDENDS.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, manufacturer of chemicals for the rubber trade, has declared a quarterly dividend of $4\frac{1}{2}$ per cent, payable June 14, on stock of record May 31. A quarterly dividend of $1\frac{1}{2}$ per cent has also been declared on the company's debenture stock, payable July 25, on stock of record July 10, 1919.

The Firestone Tire & Rubber Co., Akron, Ohio, has declared its quarterly dividends of \$1.50 on its common stock, payable June 20, on stock of record June 10, and of $1\frac{1}{2}$ per cent on its preferred stock, payable July 15 on stock of record July 1, 1919.

The General Electric Co., Schenectady, New York, has declared a dividend of \$2 a share and a further stock dividend of 2 per cent, both payable July 15 on stock of record June 7, 1919.

Globe Rubber Tire Manufacturing Co., New York City, has declared a quarterly dividend of $1\frac{1}{2}$ per cent on its common stock, payable June 15 on stock of record May 31, 1919.

Kelly-Springfield Tire Co., New York City, has declared a quarterly dividend of \$1.50 on its 6 per cent preferred stock, payable July 1 on stock of record June 16, 1919.

The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, declared its regular quarterly dividend of three per cent on the outstanding common stock, payable June 1, 1919.

The Plymouth Rubber Co., Canton, Massachusetts, has declared its regular quarterly dividend of $1\frac{3}{4}$ per cent, payable June 2 on preferred stock of record May 26, 1919.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, has declared a quarterly dividend of \$1, payable July 31 on common stock and July 15 on preferred.

THE NEW MAYWALD LABORATORIES.

For many years Dr. Austen, and later Dr. Maywald, operated laboratories at 89 Pine street, New York, chiefly for rubber investigation. Changes in lower New York and the need of more room has led Dr. Maywald to move to Newark, New Jersey, which is actually almost as near in point of time from uptown New York as is Pine street.

The new office and chemical laboratory is at 86 Park Place, two doors from the Public Service Terminal and two blocks from the Hudson Tube station, and the experimental laboratory is at Nutley, New Jersey.

Here a modern, well-equipped rubber-testing and experimental plant has been installed, including a washer, dryer, mixing mill, calender, vulcanizer and the varied array of instruments and devices for dissection, testing and analyzing rubber products of every sort. Ample accommodations are afforded for handling rubber research work and consultation practice, and visitors are cordially invited to inspect the new laboratories.

PRESIDENT-ELECT OF BRAZIL VISITS NEW YORK

President-elect Pessoa, of Brazil, arrived in New York City last month, en route to his own country, after serving as president of the Brazilian delegation to the Peace Conference. During his stay in the United States, the Pan American Society of the United States and government officials entertained Dr. Pessoa, thus affording the Government and people of the United States an opportunity of reciprocating the generous hospitality extended to ex-President Theodore Roosevelt and ex-Secretary of State Root, when they visited Brazil.

President-elect Pessoa has had a brilliant career in connection with the government affairs of Brazil, and is thoroughly representative of the new progressive generation that is coming forward in that country and Latin America. He believes in Pan Americanism which stands for real and lasting friendship between the United States and its sister American republics.

VAIL RESIGNS AS TELEPHONE PRESIDENT

Theodore N. Vail, a director of the United States Rubber Co. since 1912, has resigned as president of the American Telephone & Telegraph Co., an office which he has held since 1907. He retires from this important position to be released from many details, and to have more time for other interests. His connection with the company dates back to 1878, when he became general manager of the American Bell Telephone Co., which position he filled until 1887, after which he spent several years in travel, later going to Argentina to introduce electric railways in several South American cities. When Frederic B. Fish retired from the presidency of the great telephone company, Mr. Vail accepted the position and has filled it most acceptably ever since.

Although in his 74th year, he is keen and active, and his retirement from the presidency does not mean a severance from the company as he is still chairman of the board of directors.

TRADE NOTES.

The Dominion Asbestos & Rubber Corp., 154 Nassau street, New York City, has recently opened branches in Albany, New York, Atlanta, Georgia, and Allentown, Pennsylvania. The company increased its capital to \$100,000 the first of the year.

The Mechanical Tire Co., Inc., 49 North Third avenue, Mt. Vernon, New York, has been recently formed, with a capital of \$10,000, for the purpose of rebuilding pneumatic tires with a 3,000-mile guaranty. The plant is in operation and the business prospects are very good. Aaron Bers, who is well-known in the rubber scrap trade, is president and Charles S. Bornheim is treasurer.

The Mileage Tire Co., Inc., 2118 South Michigan avenue, Chicago, Illinois, is agent for the "Dri-Cure" retreader and uses the "Drico" rebuilding process in retreading tires. It has nine "Dri-Cure" molds in operation and besides the retreading of tires, sells the finished product, retreading equipment, tools, rubber stocks, etc.

The Alliance Tire Co., 259 West 57th street, New York City, is now handling the Goodrich line of "Safety Tread" tires and tubes.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has opened an office in the Woolworth Building, New York City, for its export department. F. B. Beck will be in charge during the absence of D. D. F. Yard, who is going to the Far East on a business trip for the company.

The Republic Rubber Corp., Youngstown, Ohio, has recently opened a branch at Charlotte, North Carolina.

The Advance Rubber Co., Brooklyn, New York, is planning the erection of a one-story plant, 200 by 130 feet, in which it will install machinery for the manufacture of high-grade fabric and cord tires.

The Excello Tire & Rubber Co., 215 North 15th street, Philadelphia, Pennsylvania, has increased its capital stock from \$500,000 to \$1,000,000, including \$400,000 preferred stock and \$600,000 common, par value \$10. J. C. Brennan is president of the company, which was established in 1914 and manufactures "Xlo" tires and red inner tubes.

The Majestic Tire & Rubber Co., Indianapolis, Indiana, has increased its capital stock from \$100,000 to \$250,000.

The Indiana Rubber & Insulated Wire Co., Jonesboro, Indiana, is building a new three-story structure, with basement, 125 by 60 feet, to be used as a warehouse and shipping room. The company manufactures automobile, motorcycle and bicycle tires and soft rubber specialties as well as insulated wire and cables. The officers are: A. F. Seiberling, president; N. Huber, vice-president; S. H. Miller, treasurer, and R. W. Seiberling, secretary and general manager.

The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, has opened a branch office in the Union Bank Building, Pittsburgh, Pennsylvania, under the management of J. E. Holveck.

Wm. B. Scaife & Sons Co., Oakmont and Pittsburgh, Pennsylvania, has opened a sales and engineering office at 38 South Dearborn street, Chicago, Illinois, with Charles F. O'Hagan, formerly chief engineer of the company at Pittsburgh, as resident engineer and manager. This concern manufactures steel tanks for air, gas and liquids, steel shipping drums and range boilers, and the well-known Scaife water softeners and filtering equipment.

The Du Pont Chemical Co. has removed its executive and sales offices to new quarters on Vandever avenue, east of Market street, Wilmington, Delaware.

The Washington Rubber Co., Washington, Pennsylvania, recently elected the following officers: J. L. Lockhart, president; S. L. McCurdy, vice-president; B. F. Mevay, Jr., secretary and treasurer; Burt S. Shafer, John W. Warrick, T. W. D. Hieber, and T. R. McKennan, directors.

The Gates Rubber Co., Denver, Colorado, is building five additional units to its factory. Two of these are four stories high with basement, of steel-reinforced concrete. One is reinforced concrete, two stories with basement. Two are brick with steel beam reinforcements. The concrete buildings are to be faced with pressed brick to harmonize with the architecture of the other buildings of the plant. All are expected to be finished and in use before the end of the summer.

The Pacific Trading Corp. of America, 90 West street, New York City, which was recently incorporated in New York and has affiliated companies in Europe and the Far East, will in future handle all rubber and other export and import business in New York, except where buyers prefer to deal directly with Far Eastern concerns. C. C. Halling is president and general manager, and F. H. Lyon, manager of the rubber department.

The American Chicle Co., Long Island City, New York, is building a new factory to occupy the full block, 200 by 600 feet, at the Degnon Terminal. It will be six stories high, of reinforced concrete, and will cost \$2,000,000.

The Tamms Silica Co., Stock Exchange Building, Chicago, Illinois, is selling amorphous silica to manufacturers of rubber erasers.

The Keystone Tire & Rubber Co., Inc., 1877 Broadway, New York City, has contracted to take the entire tire output of the Batavia Rubber Co., Batavia, New York.

TENSILE STRENGTH OF RUBBER-SULPHUR MIXTURES.

O. De Vries and H. J. Hellendoorn, using a mixture of 92½ rubber and 7½ sulphur, cured in live steam at 148 degrees C, for increasing periods, have determined that the tensile strength for short cures increases rapidly with increasing cure till it reaches a maximum at two hours' cure with a coefficient of vulcanization of 4.99 per cent. The tensile strength then decreases and finally the region is reached where the rubber becomes brittle and gives low and irregular breaking points.

Maximum tensile strength is important in several ways. (1) It is a property of more definite and typical character than the tensile strength at an intermediate cure, and therefore better suited to express and compare the properties of rubber in this respect. (2) From a practical point of view a maximum of any property is of special value for testing purposes, as small deviations due to experimental error in the neighborhood of the maximum have little influence on the numerical result which is to be determined.

OTHER MIXTURES.

The relationships existing for mixtures of 92½ parts of rubber with 7½ parts of sulphur do not obtain with other compounds as shown by the results published by Gottlob¹, Eaton and Grantham², Spence³, P. Breul⁴, Stevens⁵ and De Vries and Hellendoorn⁶.

Systematic investigation of the relation between tensile strength and state of cure for mixtures containing other compounds than sulphur only have not yet been published. There are enough data available, however, to allow the conclusion that quite distinct forms of curves will be obtained with these compounds. It is to be hoped that the systematic investigation of at least some of the more simple and most used of them will soon reveal the connections governing these cases, and so form a scientific basis for testing the rubber in such mixtures.

Money must work to succeed. Put yours to work in War Savings Stamps.

¹ "Gummi-Zeitung," 30 (1916), 306 and 326.

² "Journal of the Society of Chemical Industry," 35, 1048.

³ "Kolloid-Zeitschrift," 11, 278.

⁴ "Le Caoutchouc et La Gutta Percha," 1911, page 5298.

⁵ "Journal of the Society of Chemical Industry," 35, 872.

⁶ Bulletin of the Central Rubber Station No. 1, pages 19 and 32.

THE RUBBER ASSOCIATION'S PRESIDENT.

IN ELECTING HOMER E. SAWYER as its president, The Rubber Association of America placed at its head one who knows every detail of the manufacture of rubber from its crude state to the finished product, and one who is also a notably successful executive.



HOMER E. SAWYER.

He began in the factory of the Boston Rubber Shoe Co. in Malden, Massachusetts, at the age of 19, just after being graduated from the English High School in Boston in 1885. Working successively in each department, and mastering all the details of manufacture, he was first appointed assistant superintendent, and in 1893 was made general selling agent of the

company. This position he filled until 1901.

In the meantime the Boston Rubber Shoe Co. had been absorbed by the United States Rubber Co., and in June of the year mentioned Mr. Sawyer was elected manager of sales of the latter company. Later he was elected a director and vice-president in charge of footwear division.

He is also a director in several affiliated companies, among them being the American Commerce Co.; Canadian Consolidated Rubber Co., Limited; General Rubber Co.; General Rubber Co. of Brazil; Hastings Wool Boot Co.; United States Rubber Plantations, Inc.; Netherland Langket Rubber Co.; Rubber Regenerating Co.; Shoe Hardware Co.; United States Rubber Co., Limited, London; United States Rubber Export Co., Limited; and United States Tire Co.

Fond of out-door sports, Mr. Sawyer is a member of the Westchester Country Club, St. Andrews Golf Club, and the Racquet and Tennis Club, as well as of the Metropolitan, Union League, and Lotos Clubs of New York City, and of the Detroit Club, Detroit, Michigan.

At his home on Park avenue, New York City, is an excellent library where he spends a large part of such leisure time as his business duties allow. Believing that "the proper study of mankind is man," his favorite reading is biography, and his library is largely made up of the life-stories of prominent men, not only of America, but of other countries.

Deeply interested in the improvement of industrial conditions, Mr. Sawyer has been chosen to represent the rubber industry in the newly founded Inter-Racial Council, an association of business men formed to promote a better understanding between American employers and foreign-born employees.

He is a man of rare executive ability, keen business judgment, and quick perception, and to him is due, to a large extent, the marked success of the footwear business of the great company with which he is connected.

R. W. Palm will make his second trip to South America for the Pennsylvania Rubber Co., Jeannette, Pennsylvania, leaving this country July 1, 1919.

PERSONAL MENTION.

J. W. Coulston and J. W. Bossert, the president and treasurer of Reichard-Coulston, Inc., New York City, importer and dealer in rubber-makers' colors and chemicals, have returned from Europe after two months spent in going over the company's property there and investigating trade conditions.

J. C. Witwer has been appointed assistant superintendent in charge of production for the International India Rubber Corp., South Bend, Indiana. He was previously connected with the Kelly-Springfield Tire Co. and The Goodyear Tire & Rubber Co.

G. E. Habich has opened an office at 49 Liberty street, New York City, as a broker in crude rubber.

J. P. Cahoon has succeeded George A. Davidson as manager of the Albany, New York, branch of the Kelly-Springfield Tire Co., New York City.

A. W. Barry is the new manager of the Rochester, New York, depot of the Kelly-Springfield Tire Co., New York City. He succeeds F. T. Bailey.

D. D. F. Yard, sales director of the export division of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, will visit Honolulu en route to Australia, Straits Settlements, New Zealand, China, Japan, India, and South Africa in the interest of the company, sailing from San Francisco about July 1, 1919.

Frank L. Williams has been designated New York representative of the Tyler Rubber Co., Andover, Massachusetts, under the authorization of the company to do business in the State of New York, at 302 Broadway, New York City. Mr. Williams has been with the Tyler company for thirty-four years and manager of the New York City office for fifteen years.

H. D. Palmer has been promoted to the position of manager of the New York City office of The Portage Rubber Co., Garberton and Akron, Ohio, with headquarters at 1924 Broadway. Mr. Palmer has been New York City salesman for the Portage company since 1917.

C. D. Studebaker has been appointed district manager for the Firestone Tire & Rubber Co., Akron, Ohio, controlling its four branches in New York City, Brooklyn, and Albany, New York, and Newark, New Jersey. His headquarters will be at 1871 Broadway, the company's New York City office.

H. L. Smith, until recently of the mechanical sales department of The Republic Rubber Corp., Youngstown, Ohio, at its branch in Detroit, Michigan, has been transferred to the Philadelphia district, with headquarters at 806 North Broad street, Philadelphia, Pennsylvania.

A. S. Hetzel, who has won considerable recognition as a tire sales executive in the past two years, as manager of the Cleveland branch, has been promoted by The Republic Rubber Corp.



A. S. HETZEL.

Youngstown, Ohio, to district manager of the Philadelphia branch. In his new position Mr. Hetzel will have charge of one of the most important territories in the country and will make his headquarters in Philadelphia, Pennsylvania.

L. N. Bartlett has been appointed manager of the office of The Republic Rubber Co., Youngstown, Ohio, at 2018 Locust street, St. Louis, Missouri.

O. S. Tweedy, who recently resigned as vice-president of the L. A. Young Industries, Inc., Detroit, Michigan, to which he went in the spring of 1918, after ten years with the Diamond Rubber Co., Akron, Ohio, has been elected vice-pres-

ident of the Dryden Rubber Co., 1014 South Kildare avenue, Chicago, Illinois.

The following well-known men in the trade arrived in New York City last month, from England: O. Shaw, managing director Francis Shaw & Co., Limited, Bradshaw, Manchester; Thomas H. Hewlett, managing director, Joseph Anderson &

Sons, Limited, Clayton, Manchester, and M. H. MacKusick, managing director, The Rubber Regenerating Co., Limited, Trafford Park, Manchester.

Sir Francis Watts, head of the Imperial Department of Agriculture for the West Indies, was in New York City recently en route for England.

E. A. Andersen, president and general manager of the Rubber Regenerating Co., of Naugatuck, Connecticut, while in New York City recently, entertained O. Shaw, Thomas H. Hewlett and M. H. MacKusick, friends from England.

ALDENS' SUCCESSORS, INC., SUCCEEDS AMERICAN BRANCH OF ALDENS' SUCCESSORS, LIMITED.

Aldens' Successors, Inc., 260 Broadway, New York City, importer and dealer in crude rubber and other general merchandise, was formed June 23, with the following officers: Thomas A. Maguire, president and treasurer; Alvah H. Brown, vice-president and assistant treasurer; M. A. Howser, secretary. Directors: Thomas A. Maguire, Alvah H. Brown, John Cone, Edwin T. Rice and John French. This firm succeeds to the American business of Aldens' Successors, Limited, of London, England.

WESTON JOINS AJAX RUBBER CO.

Announcement is made by the Ajax Rubber Co., Inc., New York City, of the appointment of Joseph C. Weston as vice-president and director of that company.

For a number of years Mr. Weston has been vice-president and director of sales of the United States Tire Co. His resignation from this position is effective July 1, 1919. Mr. Weston's career in the rubber trade has been one of steady and well-merited advancement covering a period of over 20 years.

SHUGART UNITED STATES TIRE SALES MANAGER.

Within less than a year from his promotion to the post of general branch sales manager of the United States Tire Co., New York City, George S. Shugart has been advanced to the position of general sales manager. In this position Mr. Shugart succeeds Joseph C. Weston, who resigned to make an important connection with the Ajax Rubber Co.

It is particularly interesting to note that Mr. Shugart's advancement is another example of the policy of the United States Tire Co. to fill vacancies in its high places from the ranks of its own workers.

A NEW FRENCH-AMERICAN BANKING HOUSE.

Hereafter, through the recently organized French-American Banking Corporation, American business men will be able to avail themselves of banking facilities in France as advantageous as Frenchmen themselves enjoy. This alliance to promote trade between France and the United States is capitalized at \$2,000,000, with a surplus of \$500,000, all paid in, and represents combined resources of over \$1,250,000,000. Half the stock of the corporation is held by the Comptoir National d'Escompte de Paris, while the other half is shared equally by the First National Bank of Boston and the National Bank of Commerce in New York.

The corporation will engage in the acceptance business and generally assist in financing trade between the United States and France, including French colonies in all parts of the world. The First National Bank of Boston has a branch in Buenos Aires, while the Comptoir National d'Escompte de Paris has, in addition to two hundred-odd offices throughout France, branches in Spain, England, Belgium, Australia, New Zealand and India, and is preparing to open further branches in Alsace and Lorraine. These facilities will enable French and American importers and exporters to secure the best of terms and services in developing or extending their trade.

The corporation has leased the ground floor at 65 William street, corner of Cedar street, New York City.

HORACE DE LISSER RETURNS.

AT A MEETING of the board of directors of the Ajax Rubber Co., Inc., Horace De Lisser was again elected president, thereby succeeding H. D. McClaren.

Mr. De Lisser was born in 1866, in Kingston, Jamaica, where his father was for more than 20 years collector of His Majesty's customs, subsequently moving to the United States and entering the cotton business.

Horace De Lisser was educated in the elementary schools in Jamaica and the public schools of New York City, and after graduation entered the cotton goods business. In 1894 he conducted a bicycle tire factory in England, which was later sold to a London syndicate. In disposing of this business he agreed to remain out of the rubber business for five years, and therefore took the United States agency for the Holbrook Sauce Co. of London.

At the expiration of the five-year agreement he identified himself with the International Tire & Rubber Co. of Milltown, New Jersey, resigning in 1905 to establish the Ajax Standard Rubber Co., of which the present Ajax Rubber Co., Inc., is the outgrowth. With the exception of two periods of short duration, he has been president of the company since its formation, and has retained continuously the post of chairman of its board of directors. At all times he has been the guiding spirit, and under his leadership the company has made continuous progress.

In 1910 he resigned the presidency to assume the vice-presidency and management of sales of the United States Motor Co., which position he resigned in 1912 to give again his whole attention to the Ajax-Grieb Co., sailing for Europe in July to study the situation of the tire business there. In August, that year, he married, at Covent Garden, London, England, Miss Ione Maggard.

During the Great War he was appointed to the "Business Men's Staff" of General Pershing, with the rank of major, to direct the erection of factories behind the firing lines in France. He was also chairman of the Liberty Loan Committee, representing the automobile and accessory trades, and was active in floating the several bond issues.

Besides being president and chairman of the board of directors of the Ajax Rubber Co., Inc., he is director and vice-president of the Briscoe Motor Co., Jackson, Michigan; vice-president and director of the Broadway Association of New York City; treasurer of the Annual Orphans' Automobile Day Association; member of the Executive Committee of the Tire Division and chairman of the Arbitration Committee of The Rubber Association of America.

He is an ardent yachtsman and a member of the Friars, Lambs, Lotos, New York Athletic, Great Neck Country, Bankers and Traffic clubs of New York, as well as of high Masonic bodies and Mecca Temple, A. A. O. N. Mystic Shrine.



HORACE DE LISSER.

THE OBITUARY RECORD.**A PROMISING CRUDE RUBBER MAN.**

THE SUDDEN DEATH by pneumonia, May 17, 1919, of C. J. Adams, as announced last month, was a shock to his many friends in the rubber industry.

Mr. Adams was engaged in the crude rubber business in New York City for a period of fourteen years. He began originally with the crude rubber firm of H. Hagemeyer & Brunn, and later joined the firm of A. W. Brunn & Co., crude rubber brokers. On the death of A. W. Brunn, he continued in the business with the firm of Fred Stern & Co., crude rubber importers, New York City. In the latter connection he became extensively known in the rubber trade and was universally well liked in both his social and business relations.



C. J. ADAMS.

A RUBBER FACTORY MECHANICAL ENGINEER.

Daniel J. Kirkham, mechanical engineer of The McGraw Tire & Rubber Co., East Palestine, Ohio, and Cleveland, died recently at Battle Creek, Michigan, where he went for medical treatment. His death came after a prolonged illness. Mr. Kirkham was born in Trenton, New Jersey, April 7, 1880, and was educated in the public schools there and at the Trenton Mechanical School.



DANIEL J. KIRKHAM.

After an apprenticeship in practical shopwork at the Trenton Machine Works, he served successively the Quacker City Rubber Co., Philadelphia, Pennsylvania; the United and Globe Rubber Manufacturing Co.s, Trenton, New Jersey, and the Dunlop Tire & Rubber Co., Limited, Toronto, Ontario, Canada, where, after nine years' service, he resigned to join the McGraw organization last July.

Mr. Kirkham is survived by his widow and three children. A Masonic funeral was held at East Palestine, Ohio, and the interment was at Trenton, New Jersey.

A WELL-KNOWN NEW HAVEN RUBBER MAN.

The many friends of Hiram S. Raley were grieved to learn of his sudden death early in June. He was secretary-treasurer of the Raley Rubber Co., Riverton, Connecticut, manufacturer of dipped goods and nipples.

Mr. Raley was 46 years of age and was born at Eagle Harbor, Michigan. He was an expert chemical engineer, a capable and conservative manager, and for many years was associated with The Seamless Rubber Co., New Haven, Connecticut. He leaves his widow and four children.

ONE OF THE FOUNDERS OF THE RUBBER GROWERS' ASSOCIATION.

Sir William Hood Treacher, K. C. M. G., late Resident-General of the Federated Malay States, died May 3, 1919, at the age of seventy.

He was born in 1849, the son of the late Rev. J. S. Treacher, and was educated at St. Mary Hall, Oxford, England. He was

appointed Colonial Secretary at Labuan, and in 1881 was made the first Governor of British North Borneo. Later he became successively Secretary to Government, Perak; British Resident, Selangor and Perak, and Resident-General, Federated Malay States. He retired in 1904, later returning to England. He was one of the founders of the Rubber Growers' Association and a member of its council from 1907 until about a year ago, retiring because of declining health. He was a director in a number of planting companies in Sumatra, Borneo and the Federated Malay States, and as an author he wrote extensively of Borneo, on which his intimate knowledge made him an authority.

THE RAMSAY MEMORIAL FUND.

A movement deserving the favorable attention of the American rubber industry is the Ramsay Memorial Fund to commemorate the thirty-five years' service of the late Sir William Ramsay, devoted to the physical and chemical sciences, education, and public welfare. A central committee of distinguished men under the chairmanship of Lord Rayleigh and sub-committees in most of the great countries of the world are raising a fund of £100,000 for the establishment of Ramsay Research Fellowships, tenable wherever necessary facilities may be available, without national restrictions, and a Ramsay Memorial Laboratory of Engineering Chemistry at the University of London, where Sir William served twenty-six of his most fruitful years.

About half of the fund has been raised, but as only about £1,000 has been contributed by residents of the United States, the United States committee will welcome other gifts large and small. Checks may be mailed to the chairman of the United States Committee for the Ramsay Memorial Fund, Dr. Charles Baskerville, College of the City of New York, or to the treasurer, William J. Matheson, 21 Burling Slip, both in New York City.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

What promises to be the world's greatest exposition of the chemical industries is to be held in the Coliseum and First Regiment Armory, Chicago, Illinois, during the week of September 22, 1919.

Many features of general interest are being arranged in addition of the special programs of the several technical societies which will be in convocation with the exposition. The most important of these will be a symposium upon safety in the plant and mine, by speakers of authority, to be followed in the evening by a series of motion pictures of safety work in industrial plants all over the country, made under government supervision.

That the exposition will include much of interest to rubber goods manufacturers is indicated by the following roster of exhibitors identified with the rubber and allied trades: American Hard Rubber Co., Buffalo Foundry & Machine Co., Foamite Firefoam Co., General Bakelite Co., General Electric Co., Hunter Dry Kiln Co., Innis, Speiden & Co., Arthur D. Little, Inc., National Aniline & Chemical Co., Inc., the New Jersey Zinc Co., Products Sales Co., Schaeffer & Budenberg Manufacturing Co., Stresen-Reuter & Hancock, Inc., C. J. Tagliabue Manufacturing Co., Taylor Instrument Companies, Werner & Pfleiderer Co., Westinghouse Electric & Manufacturing Co., and Whitall Tatum Co.

These exhibits will include hard rubber and substitutes; machinery of various sorts, laboratory equipment and instruments; electrical apparatus, dryers and temperature controllers; colors, chemicals, accelerators and compounding ingredients; druggists' sundries and molded rubber goods; fire-extinguishers, and chemical engines.

IT IS TO YOUR BEST INTEREST TO PUT YOUR LIBERTY BOND INTEREST IN W. S. S.

A COURSE IN CORPORATION CHEMISTRY.

The Newark Technical School, 367 High street, Newark, New Jersey, announces that during the coming term Dr. Frederic Dannerth will deliver a course of thirty lectures on corporation chemistry, covering the five following general topics: Natural resources, executive departments, advisory departments, laboratory management, and the economic office.

Dr. Dannerth is a well-known industrial chemist and also the inventor of numerous secret processes employed in manufacturing rubber, resins, and plastics. The aim of his course will be to show how the principles of industrial chemistry are applied to the problems of manufacturing corporations. The lectures and seminars will be conducted in such a manner that the work of the course can be taken to advantage by the heads of the departments for purchasing, manufacturing, selling, engineering, law, and research, as well as by fourth-year men in chemistry.

Complete details can be had by addressing either Dr. D. R. Hodgdon or Dr. Frederic Dannerth at the school.

HEYDEN CHEMICAL WORKS SOLD FOR \$1,500,000.

The Heyden Chemical Works, Garfield, New

Jersey, one of the largest concerns of its kind in the United States, and which was German-owned before its seizure by former Alien Property Custodian Palmer, has been sold to Allan A. Ryan for \$1,500,000. The property includes about seven acres of land on which stand an office, laboratory, seventeen mill buildings and a salicylic acid sublimation plant.

While the products of the concern are chiefly of a pharmaceutical character, a few are of interest to the rubber trade, namely, hexamethylene tetramine, a vulcanizing accelerator, and salol, a vulcanized rubber solvent.

AJAX RUBBER CO., INC., REPORTS PROGRESS.

The Ajax Rubber Co., Inc., New York City, in its recently published annual report for the year ended December 31, 1918, comments on the unusual aspects of the business year just completed, in spite of which it recorded a gain of 40 per cent in sales over those of 1917. A summary of the report shows the following:

ASSETS.	
Capital assets	\$4,034,823.20
Current assets	6,924,239.94
Organization expenses, insurance, etc.	112,571.15
	<hr/>
	\$11,071,634.29
LIABILITIES.	
Capital stock, authorized and issued.	\$7,100,000.00
Current liabilities, including notes and accounts payable, bonuses, taxes (including war profits and income taxes), etc.	2,839,425.44
Surplus, including profits for year after providing for Federal war profits and income taxes and deducting dividends paid	1,132,208.85
	<hr/>
	\$11,071,634.29
PROFIT AND LOSS ACCOUNT.	
Sales, less expenses, allowance for depreciation of plants and equipment, discounts, etc.	\$5,459,346.14
Administration expenses, bonuses, bad debts, interest on borrowed money, loss on Liberty Bonds, etc.	2,522,885.66
	<hr/>
	\$2,936,460.48
Donations to war relief funds.	\$21,092.23
Provision for Federal war profits and income taxes (estimated)	1,700,000.00
	<hr/>
	1,721,092.23
Profits for year.	<hr/>
	\$1,215,368.25

CANADA PRODUCING RUBBER MACHINERY.

UP to two years ago practically all the machinery needed in the 23 rubber factories of Canada had to be imported, nearly all of it coming from the United States or Great Britain. More than one-half of these factories are owned and operated by the Canadian Consolidated Rubber Co., Limited, and it occurred to T. H. Rieder, formerly the president, that the machinery requirements of its own factories and such outside trade as could be secured would warrant a plant exclusively devoted to the production of special rubber machinery.

Accordingly the Rubber Machinery Shops were established, the plant shown here was erected at Kitchener, Ontario, and thus

was started the first and only concern devoted to this business in Canada. The buildings are of brick, of mill construction, fireproof, admirably adapted for the purposes intended, and fully equipped with the necessary machinery and tools.

Although the business is only 18 or 20 months old, between 100 and 150 men are steadily employed. Plans are already under way to cooperate with the city government of Kitchener: in

the event of a public technical school being established, the wood-working pattern-making, and machine-shop departments will form a valuable adjunct to the school.

The concern has established a most liberal apprenticeship system, has provided for the health and comfort of its employees, and in other ways made the work in its shops attractive. The business is flourishing and is constantly enlarging.

The executive staff is as follows: F. W. Harding, general manager; H. S. Poole, chief engineer; C. H. Harding, superintendent; Allen Clarke, production engineer, and C. W. Cressman, in charge of office.

CANADIAN NOTES.

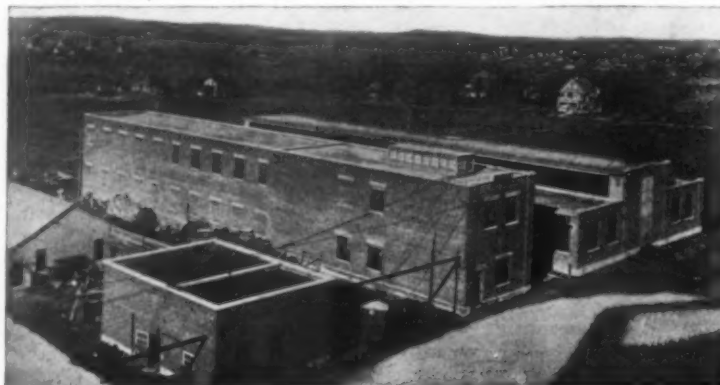
The K. & S. Canadian Tire & Rubber Co., Limited, Weston, Ontario, is to build a factory addition which will double its present floor space and provide facilities for the manufacture of dipped goods. It now manufactures rubber sundries and half-heels and whole heels. This concern is also having plans prepared for a tire factory. Connections have been established on the Continent, in England and in the United States.

The Hercules Rubber Co., Limited, Brampton, Ontario, has completed its factory and began operations early in April. It is specializing on tires, tubes, and accessories.

The Premier Rubber Co., Limited, Guelph, Ontario, has changed its name to The Northern Rubber Company, Limited. F. E. Partridge is president and A. F. Dwyer, secretary. The concern will manufacture rubber footwear exclusively in its new four-story factory now building.

The Sterling Rubber Co., Limited, Guelph, Ontario, manufacturer of high-grade rubber specialties and sundries, is building an addition to its factory which will practically double its present floor space. The cost will be about \$25,000.

The Aero Cushion Inner Tire & Rubber Co. of Ontario, Limited, Wingham, Ontario, has purchased two factory buildings, one 200 by 80 and the other 165 by 65 feet, for which it is ordering machinery to manufacture its "Aero" cushion



PLANT OF THE RUBBER MACHINERY SHOPS.

inner tires. The officers of the company are: Thomas R. Bennett, president; M. E. Zurbrigg, vice-president; G. L. Bisbee, secretary-treasurer; E. L. Sherbondy, general manager; C. E. Judson, sales manager; directors—Thomas R. Bennett, M. E. Zurbrigg, Jesse Button, Edward L. Sherbondy and L. Kennedy.

The Regina Tire & Repair Shop, 1707 Scarth street, Regina, Saskatchewan, has acquired a site for the building of a new block. J. C. Wilson is manager.

D. Duncan has been appointed credit manager of the Calgary, Alberta, branch of the Dunlop Tire & Rubber Goods Co., Limited.

The Canadian press reports that The Goodyear Tire & Rubber Co., of Canada, Limited, has disposed of the balance of its preferred treasury stock, for \$200,000 of which employees subscribed at \$95.

NEW RUBBER INTERESTS OF TALMON H. RIEDER.

The Ames Holden Tire Co., Limited, Montreal, Quebec, has just been incorporated at \$3,000,000 to manufacture automobile tires and accessories. The incorporators are Talmon H. Rieder, Douglas L. McGibbon, Stephen J. LeHurray, and others. Property has been purchased at Kitchener, Ontario, where a factory will be built.

The Mount Royal Rubber Co., Montreal, Quebec, capitalized at \$500,000, has been incorporated to manufacture rubber tires and other kinds of rubber goods. The incorporators are Talmon H. Rieder, Douglas L. McGibbon, Charles H. Ancrum, and others. Mr. Rieder, who was formerly president of the Canadian Consolidated Rubber Co., Limited, Montreal, is president. The company is planning to build a \$100,000 factory.

Talmon H. Rieder was recently elected president of the Ames-Holden-McCreedy Co., Montreal, which manufactures shoes.

ALL-WHITE POLICE UNIFORMS.

The fashion of wearing white rubber coats and caps in rainy weather, started by the police department of New York City, has been adopted by other cities. The police force of Montreal, Canada, is equipped for heavy, rainy weather with white rubber coats, caps, and boots, and the accompanying picture shows the



MONTREAL POLICE IN WHITE RUBBER COATS.

escort of a procession of returned soldiers on a recent Sunday morning. The coats, caps, and boots were manufactured by the Canadian Consolidated Rubber Co., Limited, Montreal, Canada.

JAPANESE RUBBER TOYS IN CANADA.

A report from the consul at Kingston, Ontario, comments on the replacing of German-made toys, including those of rubber, by those of other countries, with special reference to the development of the Japanese toy industry. In this connection he cites an article

which recently appeared in a Japanese magazine, from which it would appear that the Japanese product is largely supplanting the German. However, after careful investigation in his district, he finds that the American article, whether mechanical, metal or rubber, is preferred to any from Europe or Asia and that the annual trade is on the increase.

A MILL VILLAGE FOR THE HANES RUBBER CO.

The Hanes Rubber Co., Winston-Salem, North Carolina, is developing a 135-acre tract adjoining its factory as a modern mill village of the most approved type.



COTTAGES FOR HANES RUBBER CO. EMPLOYEES.

A tract of some 135 acres of attractive topography that will afford opportunity for expansion of both plant and village has been selected and a firm of well-known village planners are in charge of the work, thus assuring good architecture and pleasing landscape features.

The plans include several miles of graded, grass-bordered streets with concrete sidewalks. All traffic arteries lead to two important centers—the plant, and the community center, where will be located a building for entertainments, motion-pictures, a gymnasium, a swimming pool, also modern stores of various sorts.

A twelve-acre tract is reserved for expansion of the plant. Seven storage warehouses will be erected for raw materials, and two textile mills are projected nearby, to supply fabric needs, the first of these to be of 10,000-spindle equipment for the production of tire-building fabrics.

NEW TIRE INDUSTRY FOR BUFFALO.

The Madison Tire & Rubber Co., Inc., has erected in Buffalo, New York, a modern plant equipped with the most approved machinery for the manufacture of highest quality automobile cord and fabric tires and inner tubes. A large chemical laboratory, fully equipped with facilities for chemical control of raw materials, manufacturing process, and physical testing of the products, has been installed. In fact, provision has been made to render effective the determination of the management to place on the market only strictly high-class goods and to maintain them at a uniformly high standard of quality.

It is expected that the plant will begin operation early in July, on a daily production of 250 tires and tubes. The output will be steadily increased to full capacity of the equipment, approximately 1,000 tires and 1,000 tubes daily.

William Meyers, formerly with the Racine Auto Tire Co., is superintendent, and will be ably assisted by equally competent experts.

The main office and eastern sales department, 57th street and Broadway, New York City, will be in charge of Jean Nehmelmann, eastern sales manager, formerly with the Mohawk Rubber Co.

The control of the company is held by men connected with the United States Rubber Reclaiming Co., Inc., and with the banking firm of Ladenburg, Thalmann Co., New York.

THE RUBBER TRADE IN MASSACHUSETTS.

By Our Regular Correspondent.

THERE IS A WIDE-SPREAD MOVEMENT in this state to anticipate legislation and make 48 hours the legal measure of a week's work. Several of the rubber companies are already running their plants on this basis, and in most cases this is virtually an advance of wages, as the workers are paid the same amounts for the shorter week's work as they have received for the longer.

The Boston Rubber Shoe Co., Malden and Melrose; the Apsley Rubber Co., Hudson, and the American Rubber Co., Cambridge, are now running on the 48-hour schedule. The Converse Rubber Shoe Co., Malden, and the Hood Rubber Co., Watertown, are also running their plants 48 hours a week, this being so divided in five days that it gives the employes a double holiday, Saturday and Sunday. The Monatiquot Rubber Works Co. and the Mayflower Rubber Works Co., of South Braintree, are also running on this five-day, 48-hour schedule. In some of these latter plants the five-day schedule is an experiment, and is for the summer season only, but if the plan is successful, it may be adopted throughout the year.

* * *

The New England representatives of The B. F. Goodrich Co. convened in Boston late in May, where conferences were held with executives from the Akron headquarters at the company's branch store on Boylston street, the affair winding up with a dinner at the Copley-Plaza Hotel. Among those who addressed the meeting were: S. V. Norton, manager of truck sales; E. C. Tibbetts, advertising manager; H. H. Eager, assistant manager of truck tire sales; A. H. Leavitt, manager of pneumatic truck tire sales, and E. J. Hughes, manager of sales personnel.

A feature of the dinner was a reminiscent address by S. C. Lowe, of New Bedford, Massachusetts, the oldest Goodrich distributor in New England. A theatre party concluded the convention.

* * *

Another meeting worthy of notice, which was held too late to be reported last month, was the occasion of a visit of vice-president Homer E. Sawyer and general factory footwear manager Myron H. Clark, of the United States Rubber Co., to the plant of the Boston Rubber Shoe Co. Under the escort of G. L. Lawrence, factory manager, and P. C. Benjamin, superintendent, the two factories were inspected. At factory No. 1, where Mr. Sawyer served his apprenticeship, he was cordially greeted by a number of employes who were fellow-workers with him.

The Boston Rubber Shoe Association promptly called a special meeting for that evening at Fells Hall to entertain the visitors. An excellent dinner was served, at which Mr. Lawrence acted a toastmaster. President Guilford of the association welcomed the guests, and declared Mr. Sawyer an honorary member, Mr. Clark having previously been elected as such. Employment Manager John T. Cooper extended greetings on behalf of the employes and officials. Mr. Clark spoke earnestly of the importance of the best possible industrial relations and of the value of the foreman's influence. He referred to some of his experiences in France, and described the wonderful salvage plants there.

The address of Mr. Sawyer was of much interest as an interpretation of the desire of the company as to the relationship with the employes, and of his own personal interest in them, for he referred frequently to old friends in the factory whom he had never forgotten.

The Boston Rubber Shoe Association, which was responsible for this meeting, is composed of the heads of departments in the factories and offices of the company, and was organized in October, 1918, to bring about a better acquaintance. It has a membership of 120, and holds at least one social meeting a

month, and has been very successful in every way. Last month a ladies' night was held, in which more than a hundred couples participated. A concert, impersonations and character dancing preceded refreshments, after which a program of dancing occupied the remaining two hours before midnight.

* * *

Francis H. Appleton, the well-known reclamer, attended the four-day meeting of the Ancient Arabic Order of the Mystic Shrine at Indianapolis last month, being a delegate of Aleppo Temple, of Boston, of which body he is now Chief Rabban. Mr. Appleton is very enthusiastic regarding this order, of which there are over 8,000 members in this state.

* * *

Abraham Sydeman, general manager of the Plymouth Rubber Co., Canton, Massachusetts, is a member of the board of directors of the Citizens' National Bank, a new institution which commenced business in Boston the 19th of last month.

* * *

The Hood Rubber Co. is offering to preferred stockholders 10,000 shares of 7 per cent preferred stock, being all that remain unissued of such stock authorized to be issued at not less than par by a vote of the stockholders in July, 1917. Each holder may subscribe for one new share for each four shares, or fraction thereof, that he held June 19, and arrangements have been made to dispose, by private subscriptions, of any stock not taken by the preferred stockholders.

* * *

At a meeting of the stockholders of the Mayflower Rubber Works Co., South Braintree, Massachusetts, George E. Jeandheur was elected vice-president, and Richard K. Fields, secretary. Both these gentlemen were formerly connected with the New Jersey Car Spring & Rubber Co., Inc., of Jersey City, New Jersey.

* * *

William Whitlock, for over 15 years with The Fisk Rubber Co., Chicopee Falls, Massachusetts, has severed his connection with that concern, and will take a vacation of several months before again entering business. He has been connected with the tire business many years, at first with the G. & J. Tire Co., Indianapolis, Indiana, where he rose from foreman to superintendent, holding that position until he resigned to become assistant superintendent of the Fisk plant. Mr. Whitlock was very popular at the factory, and he leaves with the best wishes for his future of the entire Fisk organization.

* * *

Ernest C. Clark, formerly vice-president of the Clark Rubber Manufacturing Co., Franklin, Massachusetts, has severed his connection with that concern, and is now with Beck, Van Siclen Co., exporter, New York City. He is succeeded by his father, Maurice C. Clark, who was for several years with the Banigan Rubber Co., and since then has superintended the erection and installation of a number of rubber mills and reclaiming plants.

* * *

W. Irving Bullard, manager of The Merchants National Bank of Boston, Boston, Massachusetts, has been elected treasurer of the National Association of Cotton Manufacturers.

* * *

Charles T. Wilson Co., Inc., New York City, crude rubber dealer, has opened an office in the Winthrop Building, 1 Water street, Boston, Massachusetts, under the management of Marston Haviland.

* * *

A. G. McClurg has been appointed factory manager of the Carlisle Cord Tire Co., Andover, Massachusetts.

* * *

The Revere Rubber Co., Chelsea, Massachusetts, a subsidiary of the United States Rubber Co., has elected the following

officers for the ensuing year: directors—Walter S. Ballou, Charles C. Case, Samuel P. Colt, H. E. Converse, James B. Ford, Lester Leland, Charles B. Seger, and Elisha S. Williams; officers—Samuel P. Colt, chairman; Lester Leland, vice-chairman; Elisha S. Williams, president; W. H. Blackwell, treasurer; John D. Carberry, secretary; F. L. Bunker, assistant treasurer and assistant secretary; F. O. Miles, assistant treasurer.

* * *

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has disposed of its new issue of \$15,000,000 of seven per cent cumulative first preferred stock, tax-exempt in Massachusetts, on which dividends are payable on the first days of February, May, August and November.

* * *

Stickney, Tirrell & Co., importers of chalk and manufacturers of whiting, have removed to the Old South Building, Washington and Milk streets, Boston, Massachusetts. Their factory is in East Boston.

THE RUBBER TRADE IN OHIO.

By Our Regular Correspondent.

THE SCARCITY of home accommodations in Akron has furnished the stimulus for the movement to be undertaken by the Akron Home Owners' Investment Co., the president of which is Harvey S. Firestone, who is also president of the Firestone Tire & Rubber Co., Akron. Mr. Firestone has worked out a plan by which the \$5,000,000 company will erect 5,000 houses in Akron and assist those who wish to buy them on first mortgages with a proper interest rate, or on second mortgages without commission and a low rate of interest. Titles will be examined free of charge and architects' plans may be consulted in the company's office. It is hoped to provide shelter for 20,000 persons.

AKRON NOTES.

The Firestone Tire & Rubber Co., Firestone Park, Akron, has organized a colony of deaf employes under the direction of B. M. Schowe. The Firestone company has the honor of having in its employ the first deaf men ever employed in the Akron rubber industry. It is not generally known that deaf people, and deaf mutes, as well, make exceedingly expert workmen. The company also has in its employ a man who is totally blind, but who can turn out tire repair work equal to that produced by those possessed of full sight.

The Firestone company has also organized a class to study the sign language used by the deaf, under the direction of B. M. Schowe of the Labor Department. The lessons will be given twice a week and will be conducted in the sign language. The spoken word will be forbidden in the classroom.

* * *

The Goodyear Tire & Rubber Co., Akron, now employs more than 500 deaf mutes in its various departments. A special class in the factory school is conducted for their benefit and they have their own social and athletic organizations.

* * *

Miss Merry C. Echols, a graduate of Akron City Hospital, whose experience has included private nursing and institution work as the superintendent of Massillon City Hospital for eight years, has been secured by the Firestone Tire & Rubber Co., Akron, Ohio, for the position of superintendent of nurses. She had recently been resident instructor at the Akron City Hospital.

* * *

Francis A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, has been elected president of the newly formed Para Co., which is to build a \$750,000 hotel and office building where the Hotel Buchtel now stands. The company is incorporated for \$40,000 and has obtained a 99-year lease of

the hotel property, dating from April 1, 1919, but construction of the new ten-story building will not begin until late this autumn or early next spring, due to unexpired leases of tenants of the present structure.

The Goodyear Tire & Rubber Co., Akron, has appointed E. M. Sonntag special representative of the company at Madrid, Spain, to engage in promotional and investigational work throughout the chief Spanish cities.

The Goodyear Tire & Rubber Co., Akron, is building a new clubhouse for employes, opposite the factory office on Market street and Goodyear avenue, 170 by 400 feet. It is to be of brick and steel construction, five stories high, and will include all the modern industrial clubroom features, such as gymnasium, bowling alleys, showers, rest-rooms, reading-rooms, and a theatre which will seat 2,000. A corporation school with classrooms, study hall and auditorium is also provided, while on the top floor will be a lunch and dining-room on the cafeteria plan. The building will cost about \$500,000.

Fifty boy scouts with their officers will enjoy a motor-truck camping trip in trucks furnished by the Goodyear Tire and Rubber Co., Akron, beginning June 26, 1919. The boys will cover about 3,000 miles and pass through nine states, visiting the historical and scenic points along a route across the upper part of New York, through Niagara Falls, Utica, Syracuse, and Albany, across New Hampshire to Portland, Maine, and return via Boston, Providence and New Haven to Ithaca, Lake Chautauqua, and Youngstown. The trucks will be provided with pneumatic tires and have double-deck upper and lower sleeping berths.

* * *

The athletic team of The B. F. Goodrich Co., Akron, at the Memorial Day meet, rolled up a score of 59, as compared with that of 45 by the Goodyear team, 40 by Firestone, and 9 by Miller. The entry list totaled over 180, and all contestants were bona fide members of the concerns represented.

All point winners in this meet will be entered in the national factory employes' track and field meet, to be held at Gary, Indiana, July 4, 1919, under the auspices of the American Industrial Athletic Association. Horseshoe pitching and wrestling have been added to the regular list of events.

Boy Scouts connected with the Goodrich company are building a log cabin at Rex Lake from plans drawn by Henry Bishop, of Department 18-U. The cabin will be a model Scout home, with folding tables that pull to the ceiling, a 4 by 6-foot fireplace, and spacious porch, besides the customary benches, bunks and lockers.

* * *

The Mohawk Rubber Co., Akron, is completing the factory wing which will house portions of the cord-tire building and curing departments.

* * *

The American Rubber & Tire Co., Akron, has contracted for another factory wing, to be of standard mill brick and steel construction, five stories high, to cost approximately \$100,000.

* * *

Fred J. Horn, recently discharged from the Army, will represent Fred Stern & Co., crude rubber importers, New York City, in Akron, assisted by Paul Bloom.

CLEVELAND NOTES.

The Polson Rubber Co., Doan avenue and Nickel Plate Railroad, Cleveland, is planning to build a large modern factory to take care of its increased business in tire accessories.

* * *

The Ideal Tire & Rubber Co., Cleveland, has increased its capital from \$2,000,000 to \$5,000,000, consisting of \$2,500,000 worth of both preferred and common stock.

MISCELLANEOUS OHIO NOTES.

The Henderson Tire & Rubber Co., Bucyrus, has bought a three-acre site on Goodale street, Columbus, where it is building a two-story factory, 100 by 400 feet, for which new and improved machinery and equipment has been purchased. The factory is expected to be in operation by October 15, 1919.

* * *

The Long Wear Rubber Co., Elyria, Ohio, has taken over the production and sales of the Quality Tire & Rubber Co., Anderson, Indiana, and will shortly build an addition to its plant at Elyria. Both factories will be under the supervision of Frank W. O'Brien, general manager.

* * *

The annual meeting of the stockholders of the National Tire & Rubber Co. was held on Wednesday, June 11, 1919, when a financial report of the year's business was read, showing a prosperous year's business, exceeding all previous records. The sale of the remaining unissued capital stock, both common and preferred, was outlined as the initial step in a comprehensive plan for immediate expansion of the business that provides for the trebling of the output.

At the meeting of the board of directors, the following officers were elected: C. L. Merwin, president; S. L. Warner, vice-president and general manager; C. W. Helman, secretary; R. B. Taggart, treasurer.

C. E. Miley has been elected vice-president in charge of sales of the National Tire & Rubber Co., East Palestine, Ohio. Mr. Miley is widely known in the tire industry through his ten years' service as general sales manager for the McGraw Tire & Rubber Co. His affiliation promises an aggressive policy of broadening the field of distribution of the National company's products.

* * *

The Clarke Rubber Co., Elyria, Ohio, recently elected the following officers and directors: H. A. Beck, president; W. H. Clarke, vice-president; E. P. Clement, treasurer, and C. A. Squire, secretary. Directors: E. T. Clauser, C. W. Smalley, C. D. Lehman and J. A. Reublin.

* * *

The Rainbow Tire & Rubber Co., Delaware, Ohio, has acquired a factory site of 24 acres of land between the Pennsylvania and Big Four railway systems, and is planning a two-story building, 100 by 300 feet. The officers are: Charles E. Ross, president; H. L. Gilbert, vice-president; C. A. Morrison, treasurer; George E. Caylor, secretary and attorney. The directors include the above and H. E. Fegley and C. A. Waggoner.

* * *

The board of directors of The McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, recently set aside some of the common capital stock of the company for purchase by their employees at par value on the following plan. The stock may be purchased for cash or by deferred monthly payments. When first payment is made, all cash dividends are credited to the subscriber's account as additional payment until the full price has been paid. Provision is made to extend time of payment in cases of unavoidable inability to meet the regularly due instalments.

The McGraw company are demonstrating their interest in promoting the welfare of their employees, having recently presented each with individual insurance policies under the industrial group plan. The company has purchased a large tract of land near the factory, with plenty of water facilities, and plans a park for employees' use. Swimming, boating, and fishing facilities will be provided; also athletic fields and a golf course.

THE FOUNDER OF THE MCGRAW COMPANY.

EDWIN C. MCGRAW, founder and president of The McGraw Tire & Rubber Co., East Palestine, and Cleveland, Ohio, is a man of varied business interests, and the industry with which his name is most prominently identified, he established when well past middle life.



EDWIN C. MCGRAW.

Born in Pittsburgh, Pennsylvania, in 1857, and educated there by private tutors, he became a member of the firm of J. A. McGraw Brothers at the age of 23, and while with this concern he was interested successively in brick manufacture, and the hotel and real estate business. In 1908, to start his son, R. W. McGraw, in business, he secured the patent right on what was then known as

the "Vertical Fabric Thread Tire," and contracted with a Dayton, Ohio, concern to manufacture it.

In 1909 he decided to build a tire plant, and selecting East Palestine, Ohio, as a good location, he started with an initial production of eight tires a day. Additional capital and an enlarged plant has brought the product up to 5,000 tires and 6,000 tubes a day. A year ago, the company changed its policy from that of manufacturing popular-priced tires to the production of high-grade tires, and today the fabric and cord tires being turned out carry the 5,000-mile guaranty, and in addition the McGraw solid motor tires command a prominent place in the trade.

In all this progress, Mr. McGraw has been the moving spirit. Though spending the winter months at Miami, Florida, he keeps in close touch with the home office, and by his advice and counsel directs the business. He is a member of the Pittsburgh Athletic Association, is a life-member of the Elks, and is president of the Fidelity Trust and Savings Co., and a director of the Fidelity Trust Co., both of Miami, Florida, where he is also First Commodore of the Biscayne Yacht Club.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE MANUFACTURING RUBBER INDUSTRY of Rhode Island is at present in a quiescent state and marking time, awaiting the resumption of rush conditions which is believed to be inevitable in the replenishing of regular stocks during the reconstructive period. In the meanwhile the larger plants have closed down for repairs, and in some instances to make improvements. The indications on every hand are for an indefinite period of activity following the readjustment of conditions that is now under way. The manufacturers are still handicapped by the shortage of labor, especially skilled workmen, as comparatively few of the men returning from service have as yet resumed their former positions in the mills, preferring, at least during the summer months, a continuance of outdoor life.

Notices were posted on May 24 in the Woonsocket Rubber Co.'s plant, the Alice rubber mill at Woonsocket, and the Millville rubber boot mill at Millville, employing 2,500 hands; and in the National India Rubber Co.'s plant at Bristol, employing more than 4,500 operatives, announcing that, effective June 2, these footwear mills would adopt a 48-hour weekly schedule instead of the 54-hour schedule, and that rates of pay would be so readjusted that the help would earn as much wages in the 48 hours as they had been making in the 54.

The American Wringer Co., Woonsocket, employing more than 700 hands, went on a 48-hour a week schedule on June 2, instead of the 49½ hours that it has been operating on for several months, and wages were readjusted so that the pay of the operatives is not diminished. W. Maxwell Reed, plant manager, has arranged the new schedule into five working days, so as to close the factory on Saturdays and thus allow the operatives a whole holiday. With the resumption on June 2, after the Memorial Day shut-down, the plan also started running nights as well as days to take care of increasing orders.

A new time schedule has also become operative at the rubber cloth factory of the O'Bannon Corporation at West Barrington, whereby the mill starts at 7 o'clock in the morning instead of a quarter of an hour earlier, the lapse being made up at the end of the work day. A night, as well as a day shift is being operated, double shifts of men are engaged, and the plant is being operated almost continuously.

The factory of the National India Rubber Co. in Bristol, which was closed for a period of two weeks the latter part of May, resumed operations on June 2. Douglas Morey, who resigned recently as manager of the planning and industrial relations departments at the National Co., has gone to New Haven, as New England manager of the National Thrift Bond Corporation. Lawrence S. Edwards is head of the planning department, and Andrew W. Anthony has taken over the industrial relations department. James P. Murphy, former superintendent at the Narragansett Rubber Co.'s mill at Bristol, has accepted a position with the National Co.

Fire, which threatened the entire shoe division of the National company's plant, broke out on the afternoon of June 19 in the training department of the shoe room, located on the third floor of building No. 3. The sprinkler system flooded the room when the fire started, and the water penetrated through the floor into the stitching room on the second floor, and also into the paper-box-making department on the first floor and the wooden-box factory in the basement. The damage in the stitching and box departments was entirely by water, the stock and machinery being soaked. The shoe division was closed about a week, affecting about 3,000 hands.

A new pump house in addition to the present plant is being erected on the south side of the old pumping station of the National company, at the foot of Church street, to enlarge the salt-water pumping plant. This will greatly facilitate the pumping of salt water from Bristol harbor for cooling purposes.

The management of the National India Rubber Co., at Bristol, has formulated plans for an active campaign of Americanization among its operatives in connection with the general policy of the concern for the general welfare, education and uplift of employees. At the last meeting of the Bristol public school board a proposal was received from the company that a teacher from the school department be assigned to the company's works to conduct a school for five hours a day, five days a week, for 50 weeks in a year, for the purpose of teaching general education with special attention to Americanization. The proposition has been taken under consideration by the school committee.

Work has been commenced by the Woonsocket Rubber Co.

on a two-story brick building at the Alice Mill plant for the offices of the industrial relation department, which includes the employment and planning departments. The building measures 62 by 21 feet, with a one-story ell that is to be 21 by 10 feet. The second story is to be an assembly hall, where the overseers, forewomen and the various committees of the employees of the concern will meet for business purposes, and also where dances and other social gatherings will be held.

Twelve salesmen of the United States Rubber Co. arrived at the Alice Mill plant, a subsidiary of the corporation, about the middle of the month to enroll in the Woonsocket division of the training school, which is being established in the principal factories of the corporation throughout the country. After remaining a week, these left and on June 28 another class arrived, the attendance for the second week being about 60. The salesmen were instructed in the construction of all the varieties of the newer types of rubber shoes, and also given an opportunity to become acquainted with every part of the shoe. The starting of the school is to prepare the salesmen for the coming winter campaign.

The first class was entertained at luncheon in the factory restaurant one noon as guests of Henry C. Wagner, factory manager, and Herman Fahrenholz, superintendent, and at the close of the week's session a dinner was given the departing salesmen. The members of the party included F. H. Buckingham and T. H. Furlong, Buffalo, New York; Champ Beaumont and R. B. Carney, Baltimore, Maryland; H. D. Brow and C. O. Braden, Omaha, Nebraska; J. L. Kenham and W. A. Quinn, Boston, Massachusetts; C. J. Milikan and A. Baumgarten, New York City, and B. L. Andrews and M. Melman, Chicago, Illinois.

Colonel Samuel Pomeroy Colt, chairman of the executive committee, and former president of the United States Rubber Co., started on June 1 for Camp Colt, located at the foot of Mt. Katahdin, Maine, with a party of guests, whom he will entertain at his camp for three weeks, enjoying outdoor life, fishing, hunting, etc. The members of the party included Mr. and Mrs. Edwin A. Barrows, Colonel and Mrs. Harold J. Gross of Providence; Mr. and Mrs. Andrew W. Anthony; Roswell C. Colt of Bristol; Mrs. Florence Miller Beresford, Mrs. Imogene Waldron; Mrs. John W. Bicknell of New York; Countess Eleanor Moroni of New York; Charles B. Seger of New York, president of the United States Rubber Co.; Walter S. Ballou of Providence; Dr. I. Hart Noyes of Providence, and George E. Leighton of Bristol.

The Narragansett Cotton Mills, Inc., 614 Jackson Building, Providence, with mills at Apponaug, Rhode Island, will start the manufacture of tire fabric as soon as the installation of machinery is completed.

According to the last report of the Rhode Island factory inspector, dated January, 1919, there are fifteen rubber firms in the state employing 8,630 persons as follows: 4,878 men, 3,276 women, 184 boys under 16 and 292 girls under 16. The sanitary condition of five of these places of business was reported as good, of two very good, and of eight excellent.

THE RUBBER TRADE IN NEW JERSEY.

By Our Regular Correspondent.

AN INVOLUNTARY PETITION in bankruptcy has been filed in the United States District Court at Trenton against the India Tire & Rubber Co., of New Brunswick, New Jersey, by August C. Streitwolf, of that place, on behalf of three creditors of the concern. Mr. Streitwolf acted for the Rolfe Building Materials Co., the New Brunswick Iron Works, and Anthony Roth, Jr., all of New Brunswick.

Recently the company filed a voluntary petition in bankruptcy, through R. E. Watson, and this action was held by Vice-Chancellor Lane to constitute a contempt of court, as Elgin McBurney had already been named receiver for the concern through proceedings instituted in the Court of Chancery. The voluntary bankruptcy action has since been dismissed. It is now said that the creditors represented by Mr. Streitwolf, including the New Brunswick men and a number in New York City, will seek to handle the affairs of the concern, instead of having them directed through the Chancery Court.

William J. B. Stokes, head of the Thermoid, Home and Joseph Stokes rubber companies, Trenton, is now acting as chairman of the board of trustees of the big fund being collected for the family of a Trenton policeman who was slain by automobile bandits.

The Ajax Rubber Co., Inc., Trenton, has caused the arrest of the ringleader of the gang of thieves that recently stole several hundred dollars' worth of tires from its plant. The gang operated in boats along the Delaware & Raritan canal at night. Entrance was gained each time by climbing through a window when the watchman was in another part of the plant. Feet of land along the Reading railroad and are planning to build a new one-story factory on it to take care of increased business.

Charles W. Carll's Sons, Trenton, New Jersey, manufacturers of steel tables, stock calender shells, steel stock bins, tire racks, and other specialties for the rubber trade, have acquired 550

William H. Ivens' Sons are erecting a two-story brick and steel building, 60 by 60 feet, on Beakes street, Trenton, for the manufacture of hard rubber specialties.

The members of the Trenton Rubber Manufacturers' Association have recently made their annual donation of \$100 to the Trenton Day Nursery.

The Capitol Tire & Rubber Co., of New York, has opened a salesroom at 103 South Warren street, Trenton.

W. Bradford Stryker, for nine years connected with the Acme Rubber Manufacturing Co., Trenton, looking after the trade in central New Jersey and eastern Pennsylvania, and who recently returned from overseas, where he was a member of the 303d Battalion, Heavy Tank Corps, has leased a property on East State street and opened a tire and tube establishment. Mr. Stryker will devote his time to the territory he has been covering for the Acme company, while Ralph Hackett will be in charge of the office and store.

The plant formerly owned by the Diehl Manufacturing Co., in Newark avenue, Elizabeth, New Jersey, and later transferred to the Militor Corp., of New York, has been purchased by the Overland Rubber Co., a subsidiary of the Willys-Knight interests. The purchase price is reported to be \$265,000. The new owners manufacture rubber goods and automobile tires.

The Vulcanized Rubber Co., Morrisville, New Jersey, contemplates erecting a modern office building and recreation room and dining-room for the employees. The company recently bought a large plot of ground at Bridge street and Pennsylvania avenue for the purpose of expansion.

The young people of the Clinton Avenue Baptist Church, Trenton, recently held a novel "rubber social," and the admission was anything in the line of rubber. The rubber articles were donated to the worthy poor.

The girls employed at the new plant of the Semple Rubber Co. on Lambertson street, Trenton, recently held a dinner in the new dining-room at the factory. The Semple company has given the employees permission to give dinners whenever they so desire.

The Globe Rubber Tire Manufacturing Co., Trenton, has built a small addition to its storehouse. The company has taken out another permit for a one-story building on Prospect street, to cost \$1,000.

The Brighton Mills, Passaic, New Jersey, manufacturers of tire fabrics and cotton yarns, are having plans prepared for small houses in Allwood, one of the suburbs, and in the issue of its house organ, "Warp and Weft," for June 6, 1919, calls attention to the desirability of these plans for employees who desire to own their own homes. Five illustrations of attractive houses are shown, including several different styles.

The Broadway Tire Jobbers, Inc., 250 West 54th street, New York City, has received authorization to do business in New Jersey, and has opened an auto tire exchange at 255 Halsey street and a public service tire station at 270 Halsey street, Newark, New Jersey.

PACIFIC COAST NOTES.

By Our Regular Correspondent.

ONE of the most novel events of interest to the tire trade was the tire changing contest recently held at Pomona, one of the thriving suburbs of Los Angeles and Pasadena. The results were as follows:

First, Pomona Tire Co., represented by Elmer N. Rose, using a Diamond tire; prize, Bulletin trophy cup and \$25; time, 5 minutes, 52 seconds. Second, Wurl's Garage, Pomona, represented by Claude Berry, using a Hartford tire; prize, \$15. Third, G. P. Gafford, Upland, represented by Angus McCallum; prize, \$10.

Herold Daig, representing Casa Blanca Garage, Ontario; E. Austin, representing Emil Lindstrande, Monrovia, and J. E. Granger of Granger's Garage, Spadra, were the first three men to finish in the race, but were disqualified by the judges at the end of the contest, when their tires failed to show the 80 pounds pressure.

Working like mad with every nerve tingling, the contestants went through the stunt without a mishap. At each step the excitement on the part of the audience grew more and more intense as the contestants reached the pumping-up stage. When all ten were battling with the back-breaking task of pumping up the tires to the required pressure the enthusiasm reached its limit. In a remarkably short space of time the tasks were finished, when the judges examined the air and decided upon the winners, who were announced by A. V. Storer, secretary of the Citrus Belt Auto Trades Association.

When it is considered that it takes the average person perhaps about 25 minutes to change a tire and pump it up again, the winner's time of 5 minutes and 25 seconds may be considered remarkable. The record in a similar contest held in Oakland in 1917 was 3 minutes and 43 seconds, with 85 pounds as the pressure. The best time in 1919 so far was also made in Oakland, being 4 minutes and 25 seconds at 80 pounds. Another record at the same pressure was made at Stockton in 5 minutes and 10 seconds.

John Hannerwaas, vice-president of the Pacific Rubber Co., has been discharged from the Navy, where he served as an ensign through the war, and has resumed his duties with the concern in Los Angeles.

Mayor Higgins, of Brawley, in the Imperial Valley, in addition to his political and municipal duties, has accepted the agency for Globe tires in that district, representing the Hawley King Co., of Los Angeles.

* * *

The Bell Rubber Co., of Los Angeles, has started retreading solid tires with a new process, and reports remarkable success. Charles Fleming, vice-president of the concern, says that at least 45 per cent of the cost of a new tire is saved by their method and the guaranty given is the same as that on a new tire, the retreaded product often running as high as 20,000 miles. George T. Bell, president of the concern, has been in Akron, Ohio, looking over the construction of a factory with a capacity for turning out 100 reconstructed tires a day.

* * *

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, Ohio, who is also president of the Lincoln Highway Association, will be present at the dedication ceremonies of the completion of the 17-mile strip of highway in the desert regions of Utah, which will take place July 20, 1919. The construction was financed by the Goodyear company.

* * *

R. R. Colby, local manager of the Oldfield Tire Co., has received a letter from Mr. Oldfield, stating that he has already closed enough contracts to give the concern \$4,000,000 worth of business this year, and that with contracts yet to come they may run over \$10,000,000.

* * *

William T. Brooks, of Mesa, Arizona, dealer in "Horseshoe" tires for that territory, has been in Los Angeles, the guest of Roy R. Meads, president and general manager of the Pacific Rubber Co., distributor for California and Arizona. Mr. Brooks spent thirteen months in oversea service, and participated in the battles of Chateau-Thierry, St. Mihiel and the Argonne, assisting in the operation of observation balloons.

* * *

F. C. Millhoff, general sales manager of The Miller Rubber Co., of Akron, Ohio, was a recent visitor in Los Angeles. He predicted a larger demand for tires this year, due to the increase in automobilism. His company is making heavy duty tire equipment for motor trucks, and most of the testing of these tires is done in California, where many of the stage lines are equipped with them. Among them are the El Dorado stage line, the delivery trucks of the Bradford Baking Co., the White Bus Line, running from Los Angeles to San Bernardino and intermediate points, and also the Big Bear Mountain stage.

* * *

F. V. Springer, vice-president of the Hewitt Rubber Co., and Charles W. Harris, president of the Hewitt Rubber Co. of California, have been in Los Angeles conferring with J. B. Wood, distributor of Hewitt tires for this territory.

* * *

The Western Wheel Co., on Los Angeles street, has been chosen distributor of Firestone truck tires as well as Firestone rims. This company, which was formerly the Phineas Jones Co., is one of the best-equipped wheel-manufacturing plants in the entire West.

* * *

The B. F. Wade Tire & Rubber Co., which has taken over the distribution of the Knight and the Blackstone fabric tires for Southern California, will henceforth concentrate exclusively on the wholesaling of these lines. The Los Angeles retail business of the company has been purchased by Howard S. Reed, who will continue to conduct it at 512 West Eighth street. Mr. Reed was formerly in the tire business in San Bernardino, giving up his business to enlist in the Navy, where he won a commission as ensign during the war. Fred C. Schweitzer, sales manager, has just returned from seventeen months' service overseas.

Manager Bershon, of the Bershon Tire Co., announces that the Victor Rubber Co., of Springfield, Ohio, will shortly make deliveries of their cord tires, and are starting shipments to the coast.

* * *

Hugo Hoffstaedter, general manager of the Polack Tire & Rubber Co., which is distributed in California and Arizona by the Pacific Rubber Co., was a recent visitor in Los Angeles, calling on distributors and dealers in the district.

* * *

William H. Yule, until recently manager of mechanical sales for The B. F. Goodrich Rubber Co., Akron, Ohio, has resigned and will leave the rubber industry to take charge of an orange and fruit ranch which he has lately purchased near Santa Barbara, California. Mr. Yule has been with the Goodrich company since 1908.

* * *



WILLIAM H. YULE.

The Goodyear Tire & Rubber Co., 104 North 14th street, Portland, Oregon, is building a second story addition to its present building, giving 10,000 square feet of additional floor space, the building being 50 by 200 feet. This is a branch of The Goodyear Tire & Rubber Co., Akron, Ohio, and has no connection with the Goodyear Rubber Co., 67 Fourth street, Portland, Oregon, with which, through the similarity in names, it is sometimes confused.

* * *

The Western Rubber Co., 521 West 8th street, Los Angeles, California, manufacturer of tires and tubes, has changed its name to the Bradstreet Rubber Co.

* * *

E. H. Trader, sales manager of The American Rubber & Tire Co., Akron, Ohio, has left on a trip through the West, intending to spend the greater part of the summer with the distributors of American-Akron products in Los Angeles, San Francisco, and Seattle. On his way out he will stop in Denver and will return by way of Canada.

* * *

The New Jersey Zinc Co., New York City, has established warehouses in San Francisco and Los Angeles, and will hereafter distribute its zinc oxide, lithopone, and other products to the Pacific Coast trade from these centers.

THE SOUTHWEST COTTON INDUSTRY

That Southern California is destined to be the outlet for the rapidly growing cotton industry of Arizona and the Imperial Valley is evident from the significant business developments in that direction. A \$100,000 cotton-buying company, with its full capitalization paid up, has been incorporated in Los Angeles, having connections with most of the important cotton buyers in the South and East. K. M. Turner, of New York, is president; H. M. Fraser, of New York, and Richard A. Fanto, of San Francisco, are vice-presidents; J. Robinson, of New York, is treasurer, and G. C. Dennis, a Los Angeles attorney, is secretary. The new firm is known as Turner, Kuhn, Frazer, Inc. According to Mr. Dennis, the company has already made market connections with all the big cotton-buying centers of the world, and plans to make Los Angeles the concentration point for all the cotton shipping in the Southwest, its idea being that baled cotton should go to eastern and foreign markets by boat from Los Angeles harbor, after being transported here by rail.

A new cotton compress is to be erected at Los Angeles harbor and has been authorized by the city council, the Harbor Commission being instructed to enter into a contract for the installation of the plant at a cost not to exceed \$80,000. It will be

operated by the Harbor Commission as a public utility. Traffic Manager Matson of the commission says:

With a high density compress located at this port, not only will Southern California cotton for export to the Orient be brought here, but also that which goes to Europe at present through Galveston move this way.

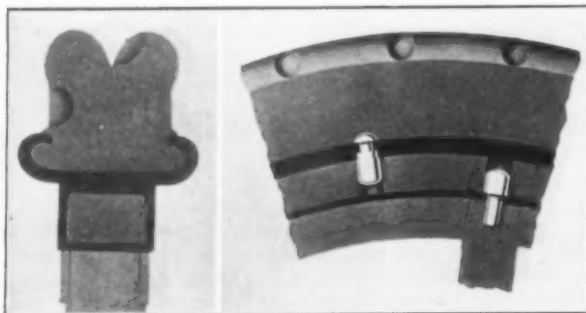
Local interests have filed with the United States Railroad Administration an application for a concentration rate so that Los Angeles will be made a point of concentration for cotton shipments. I have taken up with the Railroad administration the subject of adjusting export rates on cotton from the Texas cotton belt.

I am also in receipt of information from L. M. Fowler & Co., that several hundred thousand bales of Texas cotton, in addition to that of Southern California and Arizona, already are in sight for moving through this port the coming season, providing a high density compress is installed in time.

DUOPLEX CUSHION TIRE IN CALIFORNIA.

The National Auto Wheels Corp., Wausau, Wisconsin, will begin, on September 1, the construction of another factory near Los Angeles, California. The company manufactures wheels of a new type that are claimed to be practicable and will do away with pneumatic tires.

The outer part of the wheel is a non-skid resilient cushion tire mounted on a metal rim and guaranteed for 20,000 miles. The rim fits over a rubber cushion, inserted between the felloe and rim, and is guaranteed for the life of the car. It is con-



CROSS SECTION.

TRANSVERSE SECTION.

structed to give the utmost resiliency and absorb all shocks and rebound. It is protected on both sides by steel channels, and is insurance against crystallization.

The manufacturers claim 150 per cent saving in tire expense during the life of the car. While the initial expense in equipping a car with these wheels is greater than that of pneumatic tires, it is declared that ultimately the economy of the device will be demonstrated.

EAGLE-PICHER BUYS INTEREST IN MIDLAND CHEMICAL.

The Eagle-Picher Lead Co., Chicago, Illinois, has acquired an interest in the Midland Chemical Co., of the same city, manufacturer of "Sterling" lithopone. The offices of the Midland company will be removed to adjoin those of the Eagle-Picher company in the Continental & Commercial National Bank Building. The new board of directors of the Midland company is as follows: O. S. Picher, president; W. T. Sheffield, vice-president and secretary; T. S. Brown, Jr., treasurer; A. W. Ayer, superintendent; and H. G. Clopper. A sketch of Mr. Clopper appeared in THE INDIA RUBBER WORLD, June 1, 1919.

The General Asbestos & Rubber Co., Charleston, South Carolina, manufacturer of asbestos brake lining, steam packing, asbestos textiles, etc., are installing a power plant, which is being erected by Lockwood, Greene & Co., Atlanta, Georgia.

RUBBER FROM SAGE BRUSH AND GREASEWOOD.

CONGRESSMAN JOHN E. RAKER of California has introduced a bill in the House of Representatives for an appropriation of \$5,000 "for the investigation and study of methods and testing sage brush and greasewood, which may be used for producing rubber, alcohol and acetic acid, including their utilization." This bill is, in effect, the same as one introduced by Mr. Raker during the 1913 session of Congress but which did not get beyond the committee to which it was referred. The present bill has been referred to the Committee on Agriculture, and ordered to be printed, and is designated as Bill H. R. 1129.

Mention might be made in this connection of the investigations now in progress or recently completed, bearing on the subject of producing rubber from plants growing in the Western and Pacific States, which have been described at some length in THE INDIA RUBBER WORLD. The work of Professors H. M. Hall and Thomas H. Goodspeed is reported in the issue of June 1, 1918, naming plants containing from 2 to 10 per cent of rubber, notably the Giant Rabbit Bush (*Chrysothamnus*) and the Dwarf Rabbit Bush (*Ericameria*).

In the April 1, 1919, issue of THE INDIA RUBBER WORLD, Professor Hall is reported as saying, after further investigation of this subject, that the total amount of wild shrub in California with a rubber content is "so great that it is safe to say that there is enough rubber present to constitute an emergency supply in case we ever get into a war in which our importation would be curtailed, but the extraction of this would be an expensive process, since the average content for the whole West is probably not more than 2½ per cent, and even in the best districts it will not be more than 4 or 5 per cent on the average."

This investigation has proved the existence of over 70 species of rubber-producing plants growing in California, and Professor Jones, who is assisting Professor Hall, is extending his investigations over Utah, Nevada, Idaho, Wyoming and Colorado. Professor Hall describes as the most interesting the *Chrysothamnus nauseosus*, or "Common Green," which produces a rubber said to be superior to that from the guayule plant of Mexico. Ten or fifteen years ago endeavors were made to exploit commercially the *Picradenia floribunda utilis*, or "greasewood" of Colorado, but the result was not encouraging. However, the subject of a native rubber supply grown in the United States is one worthy of still further investigation, and the result of Mr. Raker's resolution will be watched with interest.

CONNECTICUT NOTES.

The Kelly-Springfield Tire Co., New York City, is represented in Connecticut by G. G. Winsor, who is general supervisor of the depots at New Haven, Hartford, and Bridgeport. A. C. Peoble has charge of the New Haven district and H. A. Goodale of the trade in New Haven, with headquarters at 88 College street and a service station at 274 Crown street. In Hartford, at 41-45 High street, C. C. Chaffee is in charge of the district and W. H. Lacey of the city trade. In Bridgeport, at 359 Fairfield avenue, George A. Davidson is in charge of the district and R. L. Whittington of the city trade.

The Hartford Rubber Works Co., Hartford, Connecticut, a subsidiary of the United States Rubber Co., has elected the following officers: C. B. Whittelsey, president; E. Hopkinson, vice-president; J. P. Krogh, treasurer, and J. D. Carberry, secretary.

The McMinn Tire Co., Inc., has been formed in Bridgeport, Connecticut, by Stanley P. McMinn and Harold F. Blanchard, formerly on the "Motor World," associated with George P. McMinn, until recently superintendent of the Detroit, Michigan, plant of the Barrett Co. Headquarters are at 629 Fairfield avenue, and the officers are: S. P. McMinn, president; H. F. Blanchard, vice-president, and George McMinn, secretary-treasurer.

The Economic Revolution in British Rubber Factories.

THE BRITISH have a reputation for meeting emergencies coolly and solving problems sensibly. During the darkest days of the war they considered the after-peace development of industry and decided that war losses must be made up by hard work, and that capital and labor should work happily together. It was realized that both the volume and quality of output would have to be increased through the active co-operation of labor and capital to raise the general level of productive capacity and efficiency, to maintain a high standard of workmanship and to improve working conditions. Organization must be improved, a better spirit created, and all friction and waste eliminated, and it was agreed that labor, as a party to industry, should have a voice in matters directly concerning its special interests, such as wage rates and conditions of employment.

Machinery was then created for securing united action in the pursuit of common ends and for adjusting points involving competing interests, the organization being powerful enough to insure the acceptance of its decisions with confidence by both sides, with the knowledge that they would be generally adopted.

As a result, every organized branch of British labor is being invited by the Government to participate in industrial management, and every employer's organization is being asked to take organized labor into partnership. British labor wants shorter hours, higher wages, better working and housing conditions, but more important than these it wants a share in indus-

trial management, and it is getting it with the full consent and cooperation of employers.

At the head of the new system of industrial government which is being developed in England there is a permanent council or parliament, composed of an equal number of representatives of the workers and of the employers, which literally makes laws for British industry. In each trade there is a national council comprising an equal number of representatives of employers and employees, while in each section of the country there is a district council and in each shop, factory or mine there is a workers committee made up in the same way.

Thus the British working-man and woman is getting a share in management and a real copartnership between capital and labor is being effected. The present system is by no means perfect, but it provides a basis of development and in bringing about a peaceful economic revolution has probably avoided a revolution of violence such as now threatens France. Thinking men believe it will bring greater prosperity to the British people as a whole, mitigate the labor situation and effect no damage to other than profiteering interests.

The objects, functions and constitutions of the National Joint Industrial Council of the Rubber Manufacturing Industry, and its district councils and works committees, which follow, are typical of the organizations being effected in various other industries.

THE NATIONAL JOINT INDUSTRIAL COUNCIL OF THE RUBBER MANUFACTURING INDUSTRY

Constitution Adopted at the First Meeting of the Council, Held at Montagu House, Whitehall, London, July 16, 1918.

OBJECTS.

To secure the largest possible measure of joint action between employers and workpeople for the safeguarding and development of the rubber manufacturing industry as a part of national life and for the improvement of the conditions of all engaged in that industry.

It will be open to the Council to take any action that falls within the scope of its general object. Among its more specific objects will be the following:

1. The consideration of the proposals for District Councils and Works Committees as put forward in the Whitley Report, having regard in each case to any such organizations as may already be in existence.
2. The consideration and adoption of measures for securing the inclusion of all employers and operatives in their respective organizations, and for securing the loyal observance by them of collective agreements.
3. Regular consideration of wages, hours, and working conditions in the industry as a whole.
4. The consideration of the existing machinery for the settlement of differences between different parties and sections in the industry, and the establishment of machinery for this purpose where it does not already exist.
5. The consideration of measures for securing maximum production and regular employment.
6. The encouragement of research and invention, with a view to perfecting the products of the industry.
7. The adequate safeguarding of the rights of operatives inventing or designing improvements.
8. Inquiries into special problems of the industry, including the comparative study of the statistics, organization and methods of the industry in this and other countries, and, where desirable, the publication of reports.
9. The improvement in conditions, with a view to removing danger to health in the industry, and the provision of special treatment, where necessary, for workers in the industry.
10. The supervision of entry into, and training for the industry, and co-operation with the educational authorities in arranging education in all branches for the industry.
11. Cooperation with the industrial councils of other industries to deal with problems common to them and the rubber manufacturing industry.

12. Representation of the needs and opinions of the industry to government departments and other authorities.

13. The consideration of any other matters that may be referred to it by government departments or other authorities.

CONSTITUTION.

MEMBERSHIP.

The Council shall consist of twelve representatives of the employers and twelve representatives of the operatives, appointed by the following organizations:

ASSOCIATIONS OF EMPLOYERS.

India Rubber Manufacturers' Association, Limited.	} Twelve representatives.
British Rubber Tyre Manufacturers' Association Limited	
Rubber Shoe Manufacturers' Association	

TRADE UNIONS.

Amalgamated Society of India Rubber, Cable, and Asbestos Workers	Four representatives.
National Amalgamated Union of Labour	Two representatives.
National Union of General Workers	Two representatives.
Workers' Union	Two representatives.
Amalgamated Society of Gas, Municipal and General Workers	One representative.
Waterproof Garment Workers' Trade Union	One representative.
Total	Twelve representatives.

REAPPOINTMENT.

One-third of the representatives of the said association and unions shall retire annually and shall be eligible for reappointment. Members of the Council shall retire at the end of the first and second year in an order to be determined by lot, and thereafter on the expiration of three years' membership.

COMMITTEES.

The Council may appoint such committees for special purposes as it may consider necessary, and define their powers.

CO-OPTED MEMBERS.

The Council shall have the power of appointing on committees or allowing committees to co-opt such persons of special knowledge not being mem-

bers of the Council as may serve the special purposes of the Council, provided that on such committees—

- (a) The two sides of the Council shall be equally represented, and
- (b) Any appointed or co-opted members shall serve only in a consultative capacity.

OFFICERS.

The officers shall consist of a chairman, a vice-chairman, a secretary or secretaries, and a treasurer or treasurers.

When the chairman is a representative of the operatives, the vice-chairman shall be a representative of the employers, and *vice versa*. The chairman (or, in his absence, the vice-chairman) shall preside at all meetings, and shall have a vote, but not a casting vote.

The Council shall be empowered to appoint and maintain a secretary or secretaries, and such clerical staff as it may think fit. It shall be empowered to pay them such remuneration as it may think fit.

All honorary officers shall be elected by the council at its annual meeting for a term of one year, and, subject to the condition that chairman or vice-chairman from the employers' side shall be succeeded by a representative from the operatives' side, shall be eligible for reelection.

MEETINGS OF THE COUNCIL.

The ordinary meetings of the Council shall be held as often as necessary and not less than once a quarter. The meeting in July of each year shall be the annual meeting. A special meeting shall be called on the requisition of six members of the Council. Seven days' notice of such meeting shall be given, and the business of the meeting stated in the notice.

VOTING.

The voting shall be by show of hands, or otherwise, as the Council may determine. No resolution shall be regarded as carried unless it has been approved by a majority of the members present on each side of the Council.

QUORUM.

Seven members from each side shall constitute a quorum of the Council.

FINANCE.

The expenses of the Council shall be met by the two sides of the Council in equal proportions.

The following named men constitute the employers' representatives:

FOR THE INDIA RUBBER MANUFACTURERS' ASSOCIATION, LIMITED.

P. A. Birley, Chas. Macintosh & Co., Limited, Manchester.
Hugh C. Coles, Wm. Warne & Co., Limited, London.
J. T. Goudie, The Leyland & Birmingham Rubber Co., Limited, Leyland, chairman.

E. Healey, W. & A. Bates, Limited, Leicester.
Sir G. Charles Mandleberg, J. Mandleberg & Co., Limited, Albion Waterproof Works, Manchester.

Stuart A. Russell, The India Rubber, Gutta Percha & Telegraph Works Co., Limited, Silvertown, London.

William G. Wilson, The India Rubber Manufacturers' Association, Limited, Manchester, joint secretary.

FOR THE BRITISH RUBBER TYRE MANUFACTURERS' ASSOCIATION,

F. C. Baisley, The Dunlop Rubber Co., Limited, Aston Cross, Birmingham.
F. W. Hinde, The Avon India Rubber Co., Limited, Melksham, Wilts.
Alexander Johnston, The North British Rubber Co., Limited, Castle Mills, Edinburgh.

R. H. Mallett, The Beldam Tyre Co., Limited, London.

FOR THE RUBBER SHOE MANUFACTURERS' ASSOCIATION.

The Hon. F. H. Hamilton Smith, The New Liverpool Rubber Co., Limited, Rice Lane, Walton, Liverpool.

A like number of operatives represent the Amalgamated Society of India Rubber, Cable and Asbestos Workers, National Amalgamated Union of Labour, National Union of General Workers, Worker's Union, Amalgamated Society of Gas, Municipal and General Workers and the Waterproof Garment Workers' Trade Union.

Areas, Functions, and Constitution of District Councils, Adopted by the National Council at a Meeting Held at Montagu House, Whitehall, London, September 25, 1918.

AREAS OF DISTRICT COUNCILS.

- | | |
|--|----------------------------|
| 1. London District | 4. Lancashire and District |
| 2. West of England. | 5. Edinburgh District. |
| 3. Birmingham and the Midlands District. | 6. Glasgow District. |

FUNCTIONS OF DISTRICT COUNCILS.

The main functions of the District Councils shall be as follows:

1. The consideration of any matters that may be referred to them by the National Joint Industrial Council, and executive action within their district in connection with decisions arrived at, and matters deputed to them by the National Council.

2. To make recommendations to the National Joint Industrial Council on any matters affecting the well-being of the industry as a whole.

3. To take executive action within their respective districts in connection with matters of purely local interest, including matters referred to them by works committees, subject to the right of the National Council to require notice of all decisions, as per Clause 10 hereof, and, within ten days, to veto any such action if it be found to involve the interests of other districts. The secretaries of the National Council shall communicate to the District Councils within seven days from the receipt of the minutes, as required by Clause 10 hereof, as to whether in the opinion of the officers of the National Council such action is likely to involve the interests of other districts, and a final decision must be made by the National Council within a further fourteen days. If the National Council do not exercise their right to veto any particular action of the District Councils, such decisions shall come into operation retrospectively from the date of the decision by the District Councils.

4. Cooperation with the District Councils for other industries to deal with problems of common interest.

5. Where no adequate machinery exists for the settlement of differences between parties and sections of the industry, such differences as cannot be settled within an individual factory or workshop shall be referred to the District Council, and failing a settlement by the District Council, such differences shall be referred to the National Council.

CONSTITUTION OF A DISTRICT COUNCIL.

6. MEMBERSHIP.

The Council shall consist of ——— members, appointed as to one half by associations of employers, and as to the other half by the trade unions. The unions shall be entitled to representation on District Councils in the proportion of their members employed at the associated firms in the respective areas. At least one member from each side of the National Council shall be members of the District Council in their area.

Associations of Employers.	No. of Representatives.
.....
.....
Total
Trade Unions.
.....
.....
Total

7. REAPPOINTMENT.

The representatives of the said associations and trade unions shall retire annually, and shall be eligible for reappointment by their respective asso-

ciations and trade unions. Casual vacancies shall be filled by the organization concerned, which shall appoint a member to sit until the end of the current year.

8. COMMITTEES.

The District Council may delegate special powers to any committee it appoints. The reports of all committees shall be submitted to the District Council for confirmation, except where special powers have been delegated to the Committee, and the District Council shall have power to appoint on committees or allow committees to co-opt such persons of special knowledge, not being members of the District Council, as may serve the special purposes of the Council, provided that on such committees:

- (a) The two sides of the Council shall be equally represented, and
- (b) Any appointed or co-opted members shall serve only in a consultative capacity.

9. OFFICERS.

The officers shall consist of a chairman, a vice-chairman, a secretary or secretaries and a treasurer or treasurers.

When a chairman is a representative of the operatives, the vice-chairman shall be a representative of the employers, and *vice versa*. The chairman (or, in his absence, the vice-chairman) shall preside at all meetings, and shall have a vote, but not a casting vote.

The District Council shall be empowered to appoint and maintain a secretary or secretaries, and such clerical staff as it may think fit. It shall be empowered to pay them such remuneration as it may think fit.

All honorary officers shall be elected by the Council at its annual meeting for a term of one year, and, subject to the condition that a chairman or vice-chairman from the employers' side shall be succeeded by a representative from the operatives' side, shall be eligible for reelection.

10. MEETINGS OF THE DISTRICT COUNCIL.

The ordinary meetings of the District Council shall be held as often as necessary and not less than once a quarter. The meeting in the month of May shall be the annual meeting. A special meeting of the District Council shall be called within seven days of the receipt of a requisition from one-third of the members of the District Council, with a minimum of two. The matters to be discussed at such meetings shall be stated upon the notice summoning the meeting.

Copies of the minutes of all meetings of District Councils shall be forwarded to each member of the National Council within one week of the meeting.

11. VOTING.

The voting, both in District Council and in the committees thereof, shall be by show of hands or otherwise as the District Council may determine. No resolution shall be regarded as carried unless it has been approved by a majority of members present on each side of the District Council.

12. QUORUM.

The quorum shall be a majority of the members on each side of the District Council.

13. FINANCE.

The expenses of the District Council shall be met by the two sides of the Council in equal proportions.

14. RELATION OF DISTRICT COUNCILS TO THE NATIONAL INDUSTRIAL COUNCIL AND TO THE GOVERNMENT.

The functions and constitutions of District Councils shall be submitted to the National Council for their approval.

No communications shall be addressed to government departments by District Councils, but must be forwarded through the National Industrial Council.

WORKS COMMITTEES.

Objects, Functions and Constitution of Works Committees, as adopted by the National Council at a Meeting Held at 16 Deansgate, Manchester, on November 27, 1918.

THE ——— COMPANY, LIMITED.

WORKS.

OBJECTS, FUNCTIONS AND CONSTITUTION OF WORKS COMMITTEES.

OBJECTS.

1. The objects of the Committee are:
 - (a) To provide a recognized channel of communication between the employees and the firm, in order to secure the largest possible measure of joint action between them in any matters relating to the welfare of the workers, and to the general advancement of the business and the employees as a whole.
 - (b) To consider any matters that may be referred to it either by the management or by the employees of the works.
 - (c) To present to the firm through the Committee any suggestion which, after full consideration, it is decided should be put forward.

FUNCTIONS.

2. The functions of the Committee shall be purely advisory or consultative, the intention being that by discussion of matters between employees and the management a mutually satisfactory conclusion may be reached in respect of questions discussed.

Amongst other suitable matters for discussion may be quoted the following:

1. Welfare and social subjects.
2. Suggestions.
3. Working hours.
4. Regularity of employment.
5. Output.
6. Improvements in methods and machinery.
7. Discipline.
8. Grievances.
9. Disputes.

CONSTITUTION.

3. The committee shall be a joint committee consisting of not more than twelve representatives of the management and, unless otherwise agreed by the parties, not more than twelve representatives of the employees engaged in one or other of the manufacturing operations of the india rubber trade. The employees' side of the Committee shall be elected by ballot by constituencies into which the works are divided as shown in the particulars contained in Part II, and according to the rules therein mentioned. The representation shall be based on the principle that all departments shall be directly represented according to their importance, the smaller departments being grouped in such a way that their interests can be properly looked after by one representative.

4. No one shall be eligible for membership of the Committee who is under 21 years of age and who is not actually working in the factory and who has not a service qualification of one year with the firm and three years in the industry, unless with the consent of the management.

5. The representatives of the management on the Committee shall be appointed by the firm.

6. The period for which employee members shall hold office shall be twelve months, ending on the — day of — in each year, and the appointment and period of office of management members shall be at the discretion of the firm.

7. Women shall be entitled to election on the Committee as provided for in Part II hereof.

8. In cases where a member of the Committee leaves the employment of the firm, such member shall thereupon cease to be a member of the Committee. Casual vacancies may be filled either by ballot or otherwise as the Committee may determine.

OFFICERS.

9. The officers shall consist of a chairman, who shall be nominated by the firm, and two secretaries, one appointed by the management, and the other by the operative members of the Committee.

MEETINGS.

10. The Committee shall meet once a month, at a date and time to be fixed by the firm, but extra meetings may be held when necessary on the requisition of four members, who shall state the special object for which the meeting is to be held.

11. The employee members shall be paid for the time occupied at meetings on the basis of the sum lost by them through their absence from work.

12. Meetings shall take place at the works, and may be summoned informally by verbal notice to the members.

13. The presence of one half of the members from each side of the Committee shall be necessary to form a quorum.

14. An agenda shall be prepared by the secretaries for all meetings, and items may be included by either or both sides of the Committee.

15. No delegate shall bring forward a complaint at a meeting unless it has first been ascertained that the same has been referred for settlement through the ordinary channels.

16. Any matter which it is desired to bring forward for discussion at the regular monthly meeting should be notified to the Secretaries at least three days before the date of the meeting.

17. No recommendation shall be regarded as made, or resolution passed, unless it is approved by a majority on each side of the Committee.

18. Regular minutes shall be kept of the proceedings at meetings of the Committee.

CONNECTION WITH DISTRICT AND NATIONAL COUNCILS.

19. The Works Committee may by resolution decide what matters shall be referred to the District Council for decision.

20. The Works Committee may not deal with wages questions or other matters which would affect the district as a whole unless with the consent of the District Council.

21. The Works Committee shall respect any decisions of the National Joint Industrial Council of the Rubber Manufacturing Industry and the District Council thereof as to the functions and work which may be properly undertaken by the Works Committee.

FINANCE.

22. The expenses of the Committee shall be borne by the Firm.

PART II.

REGULATIONS REGARDING BALLOTING FOR OPERATIVES' REPRESENTATIVES.

1. Elections of operatives' representatives on the Committee shall be held in the month of — in each year.

2. Any employee in a department fulfilling the service qualification may be nominated for election, provided a nomination form signed by three employees entitled to vote is lodged with the returning officer not later than 14 clear days before the date fixed for the election.

3. A serving member of the Committee shall be eligible for reelection.

4. The form of nomination shall be as follows:

To the Returning Officer for Election of Works Committee.
We, the undersigned employees in the — department, and entitled to vote, hereby nominate — for election to the Works Committee as representative of No. — constituency.

5. The returning officer and counters shall be appointed by the management for the first election, and thereafter by the Works Committee.

6. A register of operatives, having at least one month's service with the firm as the period entitling them to vote, shall be settled as soon as possible, and at least one month before the first committee is appointed, and may be amended from time to time by the inclusion of new employees and the deletion of names of operatives left or deceased.

7. The ballot shall be secret, and numbered balloting papers, giving the names of those nominated, shall be issued to voting operatives.

8. No canvassing shall be allowed in the works, and balloting papers will be collected in the departments by the returning officer or his assistants.

9. The certificate of the returning officer as to the members elected shall be final.

10. The regulations contained in this section (Part II) as to the arrangement of constituencies and balloting may be amended by resolution of the committee, subject to the approval of the District and National Councils.

11. The following is a specimen scheme for the division of the Works into constituencies, showing the allocation of representatives. Each firm will draw up a list to meet its own particular conditions.

DIVISION OF WORKS INTO CONSTITUENCIES.

Departments.	Representatives	
	Male.	Female.
1	1	..
2 .....	..	1
3	1	..
4	1	..
5	1	..
6	1	..
7	1	..
8	1	..
9	1	..
10	1	..
11 .....	..	1
12 .....	..	1

These councils and committees of the rubber and allied industries aim to solve the problems of industry by agreement. They plan to adjust the hours of work instead of striking or resorting to Parliamentary legislation; they specify wage rates instead of fighting for them; they standardize products, eliminating wasteful competition, cooperating in selling, and helping to link together all the industries of the country into a great national business for the common good.

This new democracy of British business is laying the foundation for an industrial nation far greater than Germany could ever hope to build up through government subsidies, for the coming power of British industry lies in the cordial relations developing between capital and labor. As Arthur Henderson, secretary of the British Labor Party, aptly puts it, labor and capital in England have recognized themselves as the "trustees of industry."

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

TRADE RESTRICTIONS.

MOVEMENTS with regard to restrictions on trade are now becoming more general and no doubt those which particularly interest the readers of this paper are well known to them before this correspondence appears in print. Of special interest was the announcement on May 14 that all restrictions on the import of rubber goods were taken off and that tires and rubber boots could be imported to the extent of 50 per cent of the 1913 import. As the great rush of American tires was in 1915 and 1916, the present concession does not amount to so very much for America, but more for France, as her chief tire factories are situated in the non-invaded area. The proofing branch of the trade is quite indifferent as to the removal of import restrictions, especially with regard to America.

While on this point I may say that I was discussing the relative importance of British and American proofing works the other day with a certain patentee. He said that he had been surprised to learn how much more important both in size and output the British works are as compared with the American. He was, I may say, new to the trade, but he had imagined that the reverse was the case.

Restrictions still hold on dress preservers which have come to us largely from America, although British firms seem to be very chary in risking capital in the necessary plant to enable them to compete successfully with America. It is pointed out that the rubber plate hitherto made only in America and Germany accounts for only one-tenth of the cost of the finished article. The unrestricted imports of vulcanite goods will hardly suit those rubber manufacturers who have laid themselves out for this branch during the last four years. The general idea seems to be that practically all our vulcanite goods in the past came from Germany, but certain buyers say that much has always come from America and that America is quite Germany's equal as regards quality. A recent feature of our trade has been the manufacture of small articles like pipe mouth-pieces and magnetos by firms who used to get the goods from Germany and found that British rubber firms would do the business only at too high a price. Moreover, in many cases the quality was unsatisfactory. It will be interesting to see whether these makers of vulcanite mainly for their use continue to supply their own requirements or revert to buying the imported goods.

Now that restrictions are off, buyers of American reclaimed rubber can now get brands which have been almost unobtainable for more than two years. It cannot be said, however, that business is very brisk, as regards reclaims, though the extensions in progress at our largest works indicate that the future is looked forward to with confidence.

W. T. GLOVER & CO., LIMITED.

At the annual meeting of this Manchester cable-making concern on May 12, the important announcement was made by the chairman, A. L. Ormerod, that arrangements had been made by Vicker's Limited, the well-known armament firm of Sheffield and Barrow-in-Furness, to acquire a controlling interest in the company. The terms to be paid by Vicker's are 17s. 6d. for every £1 preference share, the market quotation, and five ordinary Vicker's shares for every four ordinary £1 Glover's shares. The chairman regarded the deal as being eminently satisfactory to the shareholders of Glover's. This is by no means Vicker's first absorption or amalgamation, in view of after-war enterprise, two or three other important deals of the kind having already been put through.

It was pointed out by the chairman that Vicker's ordinary

shares had a dividend of 12½ per cent while Glover's had never exceeded 7½ per cent, this being the dividend for 1918, viz., 5 per cent plus 2½ per cent bonus, all tax free. It is understood that no change will take place in the management and that the works will continue their usual routine.

THE REVIVAL OF SPORTS.

The sporting goods branch of the trade, which was very badly hit by the war, is now having a good time, as cricket, lawn tennis, etc., have come again into their own. Players, however, are finding their expenses much increased, as not only are club subscriptions generally increased, but all accessories have gone up. For instance, lawn-tennis balls of match quality are now retailed at 2 shillings each, the great rise being due to the cost of labor and the felt cover. Some surprise has been expressed at the golf ball being still at its pre-war price, but this is not so much concerned with labor and there is no textile present; moreover, I believe I am right in saying that you can use last year's stock. In some cases the lawn-tennis balls are turned out finished by the rubber works; in other cases the large dealers in sporting goods buy the uncovered balls and put on the felt or melton cover to which a pure rubber coat has been applied by some rubber works in the piece. This is the procedure with the recognized tournament balls.

MANDLEBERG'S IMPROVEMENTS IN THE TREATMENT OF BALLOON FABRIC.

Two patents have recently been taken out by J. H. Mandleberg and J. Mandleberg & Co., Limited, with this object, one claiming the impregnation of the fabric with petroleum jelly, and the other giving the details of the impermeable rubber mixing which is applied to the impregnated fabric. The detailed account of the rubber mixing is interesting, mainly because it forms somewhat unusual subject matter for a patent, such details usually being kept as what is known as a secret process. It is stated in the patent that the invention provides an improved composition mainly consisting of india rubber for impregnating and coating balloon fabrics imparting a higher degree of impermeability relatively to the weight of the composition per unit of area treated than the composition hitherto employed for the said purpose, so that for any predetermined degree of impermeability a fabric or material treated with the improved composition will be of less weight than similar material treated with known compositions. The composition comprises india rubber, the nerve of which is completely destroyed, wax, litharge and sulphur in specified proportions.

With regard to this, it seems to me that there must be great difficulty in knowing what mixings or formula have been used by the various manufacturers of balloon fabric. It may be that the patentees have examined all other makes and proved the absence of wax and litharge either jointly or separately, though it would be impossible to testify to the number of coats put on, the exact quality of the rubber, the precise physical condition of the sulphur and so on. For these reasons it has always seemed to me to be a very difficult thing to protect a rubber formula—that is in the way of proving.

Interesting points about the details given are the exclusive use of fine, hard Pará, and the use of precipitated sulphur, an article which dealers have always found it very difficult to sell to the trade. As regards solvents, the use is advocated of a solvent having a low boiling point, such as very pure coal-tar naphtha or benzene. It is somewhat curious to find these two products lumped together, as there is considerable difference between their respective boiling points and it is rare to find

them satisfactorily employed for the same purpose in spreading. As many as 16 coats are given to the fabric to obtain the best result and vulcanization is effected in steam at 285 to 295 degrees F. for 1½ to 2 hours, with ¼-hour rise, the high temperature having, it is stated, very beneficial results in the impermeability of the fabric.

At the annual meeting of the firm, held on May 2, the chairman, Sir Charles Mandleberg, gave some interesting references to the war-time activities of the firm.

The subject of gas-mask material had been investigated, he said, in their laboratory and a large amount supplied to the Government. With regard to airship fabrics also, special investigation had been carried out, this material having been made in large quantities as well as airship envelopes and complete kite balloons. The profits for 1918 were £91,089, which, with the last substantial carry forward allowed a dividend and bonus of 22½ per cent in the ordinary shares, the sum of £82,772 being carried forward. Speaking of the future, the chairman, like many others in a similar position, referred to the present demands of labor and the influence that increased working expenses cannot fail to have upon our capacity to compete in the export trade.

A HUGE NEW CALENDER.

David Bridge & Co., Limited, of Castleton, Manchester, has made recently to the order of a well-known firm of rubber manufacturers, a large motor-driven three-roll universal calender. The size is remarkable, as it weighs 65 tons, the center roll being 9½ tons, while the top and bottom are 8½ tons. It runs at the rate of 22½ yards per minute.

The special gearing of the machine allows of the following effects being produced:

1. All the rolls can be run at even speed.
2. The bottom and middle rolls can be run at friction speed while the top and middle rolls remain at even speed.
3. The bottom and middle rolls can be run at even speed while the top and middle run at friction speed.
4. Both the top and bottom rolls can be run at friction speed.

The rolls, which are 30 inches in diameter, are made of deep chilled cast iron.

HOOLEY HILL RUBBER & CHEMICAL CO.

In connection with the disastrous explosion which took place in June, 1917, at this factory in the Manchester district, litigation has been in progress with the insurance companies, which were willing to pay for the damage caused by the fire which broke out, but not for the further damage done by the subsequent explosion of dangerous material being made for the Government. The arbitrator gave judgment in favor of the insurance companies, but stated a case for the High Court which upheld his judgment. The Hooley Hill company, therefore, gets £12,740 instead of double that amount. The wrecked building was one which had been specially fitted up for Government work and was not the main building connected with the ordinary trade of the company.

INFLAMMABILITY OF CARBON BLACK.

The article on this subject in the May issue of THE INDIA RUBBER WORLD, is of interest as dealing with a topic that is little understood in rubber work, i. e., the danger of explosion when the atmosphere of a room is heavily laden with fine particles of a combustible substance. I find that possible danger from this source is very rarely apprehended. Similar tests with regard to the propagation of flame in such dusts have been carried out in our special testing stations in connection with colliery explosions, though I have not seen any reference to them in rubber journalism. From the article quoted, carbon black does not seem to be particularly dangerous and now that methods of working it which obviate the production of a dusty atmosphere are known, there seems no reason to apprehend anything disastrous in the rubber-mixing room.

BASEBALL IN ENGLAND.

Baseball teams have been organized at various centers where Americans are now in residence, notably the Universities of Cambridge, Dublin, Manchester and Birmingham, and so the public is getting an insight into the game which is generally described by the non-expert as a combination of cricket and rounders. I had an opportunity recently of witnessing my first game, a contest between Manchester and Birmingham Universities, and shall now take more interest in the accounts which appear from time to time in THE INDIA RUBBER WORLD of matches at summer outings. In the match in question Manchester won by 23 runs to nil, but the one-sidedness of the game did not matter to the audience, which had no idea what the score was. The applause was concentrated on feats most closely resembling those of cricket, such as catching the ball in the long field and hits out of the ground. Whether you understand the game or not it is certainly interesting and exciting to watch. It was a thoughtful act of the management to provide each of those who paid for admission with a small pamphlet containing a diagram and description of the game. Though I could not read the letter and watch the game at the same time, I elected to keep the literature for home perusal.

THE MENACE OF THE TRUSTS.

It can hardly escape notice that the rubber goods import restrictions favor two branches of the home trade more than any others and that these two branches, viz., tires and footwear, have special trade organizations of their own and are thereby able to bring pressure upon the authorities. As an addendum to what I said in these notes in the May issue of THE INDIA RUBBER WORLD, a government committee has been considering the extension of trade organization and combinations from the point of view of public interest. The contention is made that these trade combinations are necessary in order to meet foreign competition abroad and this view is evidently held in America, to judge by the Webb Act recently passed. Whatever may be the case in countries which have long lived under protection the British, who have lived under free trade, are more than apprehensive that these various combinations mean high prices all around to home consumers. The government committee is agreed that it is desirable to institute a tribunal to examine into the operation of our trusts and combines in the interest of the home consumer on the lines of the tribunals which already exist in American and some of our colonies.

INSULATED WIRE AND CABLES FOR AUSTRALIA.

The Minister of Customs of Australia has published a new Customs regulation governing the standard of test and quality for imported electric cables. Some of the cables previously imported have been unsafe to use, leading to the fusing of the conductors and outbreaks of fires.

Each coil of insulated wire imported must bear a label stating the manufacturer's name and address, length of coil, date of manufacture, gage of conductors, and the insulation resistance. These regulations are effective July 1, 1919.

RUBBER STATISTICS FOR BRITISH INDIA.

The Madras Presidency, British India, through all ports, imported from the Atlantic Coast of the United States during the year ended March 31, 1918, manufactured rubber goods as follows: tires and tubes, \$3,666; miscellaneous, \$10,570.

A NETHERLANDS RUBBER FACTORY.

The Naamlouze Vennootschap Vereenigde Nederlandsche Rubberfabrieken is located at Doorwerth, Province of Gelderland, Netherlands, and controls other factories at Doorwerth (near Wageningen), Hoogezaand, and Amsterdam, while it maintains branch offices at Groningen, Rotterdam, Leeuwarden, and in Amsterdam at 647 Keizersgracht.

Miscellaneous Foreign Notes.

MARSEILLES CRUDE RUBBER IMPORTS INCREASING.

SOME years ago the quantity of rubber imported through Marseilles into France was negligible. French factories imported their African and South American rubber through Bordeaux, Le Havre and Antwerp, while their plantation rubber came through London. But, since the war started, there has been a great increase in the Marseilles imports, with a corresponding decrease of imports through the other ports mentioned. In 1916 Marseilles rubber imports already amounted to 6,019,640 pounds and they increased in 1917 and 1918, but the French Government no longer publishes the exact amounts.

CHAMBER OF COMMERCE ESTABLISHED IN PERSIA.

Under the auspices and with the financial support of the Persian Government, a chamber of commerce has been organized in Teheran, to consist of not less than six nor more than eighteen members, one-half to be appointed by the Minister of Commerce and one-half by the merchants of the city. Sub-chambers may be organized in other Persian cities. The object of the organization is to strengthen and extend commercial relations with the United States, and to this end American trade catalogs and publications are desired. They should be addressed to the Chamber of Commerce, Teheran, Persia, and will be available to those interested, at a reading room maintained by the Chamber.

NORWEGIAN-AMERICAN EXHIBITION IN CHRISTIANIA.

September 10-24, 1919, has been set as the dates between which the Norwegian-American Exhibition will be held in Christiania, Norway.

MARKET IN SWITZERLAND FOR TIRES AND TUBES.

It is expected that after the peace treaty is signed there will exist a large demand in Switzerland for rubber tires and tubes.

NEW ZEALAND IMPORTS OF RUBBER BOOTS AND SHOES.

A comparison of available figures for the years 1914 and 1917 covering the imports of the chief classes of rubber footwear into New Zealand and the countries of origin shows that while the United States has not even held her own in some of these specialties, Japan has made considerable gain. Canada, also, has increased her trade, particularly in rubber boots. This is partly due to the difference in tariff and the improved quality of Canadian rubber footwear of the present day.

Articles and Countries of Origin.	1914.		1917.	
	Dozen Pairs.	Value.	Dozen Pairs.	Value.
Molded rubber and cork soles:				
From United Kingdom		\$5,329		\$8,492
Canada		798		1,840
Japan				160
United States		29		842
Other countries		389		82
Totals		\$6,545		\$11,416
Galoshes, rubber overshoes, gymnasium shoes, etc.:				
From United Kingdom	24,167	\$86,624	16,193	\$65,722
Canada	3,160	22,746	3,800	24,955
Japan			1,680	5,621
United States	2,850	17,807	2,401	16,585
Other countries	405	1,289	146	
Totals	30,582	\$128,466	24,220	\$112,883
Rubber boots:				
From United Kingdom	223	\$11,246	67	\$3,621
Canada	360	11,689	886	27,705
Australia	14	744	29	871
United States	1,272	48,942	1,449	50,563
Totals	1,869	\$72,621	2,431	\$82,760

Further figures comparing the value of the imports of rubber goods other than tires show that during the month of January, 1915, these amounted to only \$12,652 as against \$13,621 for the month of December, 1918.

The consul at Auckland states as his opinion that if favorable adjustment were made of the duties imposed on the importations of these goods, American business could be considerably increased in New Zealand as American goods are well received and sell readily in competition with other makes of similar quality.

SIAMESE TRADE IN RUBBER GOODS.

According to a report issued by Vice-Consul Carl C. Hansen at Bangkok, the exports of crude rubber from Siam to foreign countries for the fiscal year ended March 31, 1918, amounted to 24,000 pounds, against 23,123 pounds in 1916. These figures also include rubber substitutes.

The customs reports for the past five years show an increasing demand for rubber goods, the following figures representing the total imports through the port of Bangkok:

	Pounds.	Values.
1914.....	158,782	\$119,509
1915.....	143,206	103,702
1916.....	157,601	127,507
1917.....	189,061	165,081
1918.....	194,226	166,800

This covers automobile, cycle, and all other tires and also rubber manufactures.

The origin and declared value of rubber goods, landed at Bangkok during five fiscal years ended March 31, 1918, are given below:

Articles and Countries of Origin.	1913-14.	1914-15.	1915-16.	1916-17.	1917-18.
Motor car tires..... ^{ticals}	129,928	103,534	140,480	157,203	163,136
United States	1,500	91	2,358	24,603	23,513
France	126	250			2,000
Germany	11,312	6,480			
Italy		1,271			599
Singapore	21,075	74,233	107,884	111,198	129,871
United Kingdom	95,827	21,229	30,238	20,803	7,085
Cycle tires	34,934	25,919	39,327	56,922	32,645
United States		201	7	702	98
Belgium		234			
France		142			
Germany	7,577	1,790			
Italy			1,069		
Japan				2,857	3,252
Singapore	11,024	13,464	24,353	26,323	20,944
United Kingdom	16,131	9,796	13,898	27,040	8,354
All other tires	51,320	49,473	45,393	68,697	65,665
United States			362	1,144	1,325
France	48				
Germany	299				
Japan	75	283	47	1,000	1,736
Singapore	1,974	4,293	10,469	10,605	37,837
United Kingdom	48,924	44,897	34,515	55,858	24,767
All other rubber goods.....	106,812	101,350	119,413	163,342	189,364
United States	504	730	2,707	3,287	11,951
China		363	97	400	610
France		220	11	156	65
Germany	14,408	10,580	1,326		
Hongkong	1,853	1,630	1,888	6,009	3,555
Japan	1,191	1,682	6,984	22,766	21,139
Singapore	46,249	54,927	75,110	80,725	119,666
United Kingdom	40,965	28,053	30,150	49,442	32,031
Totals	644,276	559,655	688,086	891,771	900,609

¹One tical = 37 cents, United States currency.

A NEW SUBSTANCE RESEMBLING RUBBER.

"The 'Bulletin de l'Office Colonial,' volume XI, Nos. 127-128, Melun, France, 1918, contains an article by F. Heim, giving the results of an investigation made by the director of the 'Service d'Etude des Productions Coloniales' to determine the commercial value of a rubber-like substance from North Kamerun, Africa, samples of which were submitted. These samples were in the form of small bars and in large pieces and blocks in loaf form.

The product is rose-colored with a slightly darker surface which can possibly be attributed to oxidation. The dark red or black particles easily separate from the substance when heated and are of the quality of rubber. The substance seems to have properties between caoutchouc and gutta percha. The

viscosity is from 1 to 1.01 and at 40 degrees C. it becomes soft.

In the raw state it is well adapted for the manufacture of molded articles and use in surgery, dentistry, etc. The strength is less than that of caoutchouc, while the elasticity can be retained by a weak vulcanization. The substance can be hardened by vulcanizing and rendered inviolable for surgical and chemical uses. It is especially valuable as an insulating material for electric cables.

INCREASE OF RUBBER EXPORTS FROM THE STRAITS SETTLEMENTS.

The statistics given in our issue of April 1, 1919, concerning the gross quantities and values of the imports and exports of rubber for the Straits Settlements during 1917, were compiled before the Government figures were obtainable relative to the imports and exports by articles and countries of origin and destination.

The official figures recently published, according to the United States Consul General at Singapore, show that the total value of rubber exports for 1917 was much larger than that of 1916. United States exports of Pará rubber alone amounted in value to \$84,000,000, as compared with \$47,291,000 in 1916. Imports of manufactured rubber from the United States show a decrease of \$26,000 for 1917, compared with 1916 figures.

In the following table is given the value of the imports and exports of crude and manufactured india rubber and gutta percha for 1916 and 1917:

EXPORTS.		
UNMANUFACTURED—		
India and Borneo rubber:	1916. Value.	1917. Value.
To United Kingdom	\$421,000	\$133,000
Japan	112,000	68,000
United States	27,000	25,000
Totals	\$560,000	\$226,000
Pará rubber:		
To United Kingdom	\$15,564,000	\$18,201,000
Australia	203,000	266,000
Canada	885,000	6,554,000
France	635,000	1,034,000
Italy	167,000	1,236,000
Japan	2,812,000	3,610,000
Russia	6,716,000	3,173,000
United States	47,291,000	84,000,000
Totals	\$74,273,000	\$118,074,000
Gutta percha:		
To United Kingdom	\$558,000	\$865,000
France	8,000	23,000
Italy	1,000	20,000
Japan	11,000	30,000
Russia		20,000
United States	261,000	600,000
Totals	\$839,000	\$1,558,000
IMPORTS.		
MANUFACTURED—		
Tires:		
From United Kingdom	\$419,000	\$223,000
Australia		46,000
France	\$4,000	253,000
Italy	204,000	202,000
Japan	258,000	138,000
United States	91,000	66,000
Totals	\$1,026,000	\$928,000
Druggists' and dentists' sundries:		
From United Kingdom	\$24,000	\$19,000
United States	14,000	10,000
Totals	\$38,000	\$29,000
Other rubber goods:		
From United Kingdom	\$60,000	\$71,000
France	4,000	
Japan	34,000	44,000
United States	5,000	4,000
Totals	\$103,000	\$119,000

¹A peso equals \$0.965 United States currency.

BOLIVIA APPROVES PLAN FOR RUBBER GOODS FACTORY.

The National Congress of Bolivia has approved the law projected by the President, by which fifty per cent of a capital of 300,000 bolivianos (1 boliviano = \$0.389) is guaranteed for the establishment of a rubber goods factory in Santa Cruz, or Cochabamba. ("Bulletin of the Pan American Union.")

MEXICO TO HAVE NEW RUBBER FACTORY.

The Fomento de Comercio Internacional, S. A. (International Commerce Exchange), is the name of the new rubber company which is building a factory in Mexico City, Mexico, for the manufacture of automobile tires and inner tubes. While not yet completed, work on production has already been begun, about 100 hands being employed. About 25 tires and tubes daily are now being turned out, according to the president of the concern.

The factory is of modern brick and cement construction, with its own electric lighting plant, and oil is used for fuel. It is equipped with American machinery and American foremen are in charge.

Equipment for the manufacture of raincoats, hot-water bags, and rubber soles and heels has also been installed, and the company hopes later to manufacture all kinds of rubber goods, employing 350 hands when running at full capacity.

There is one other small rubber factory in Mexico City, equipped for the manufacture of rubber tires, but it is producing none at present.

RUBBER EQUIPMENT FOR MEXICAN RAILWAYS.

Among the items of rubber materials required by railway lines south of Mexico City are the following: 15,300 pieces air-brake hose, and 3,150 pieces air hose.

Quotations should be addressed to either Mr. Silviano Pruneda, Purchasing Agent, Estación Buenavista, Ferrocarril Mexicano, Mexico, D. F., or to Mr. F. P. de Hoyos, General Agent, Mexican Government Railway Administration, Woolworth Building, New York City.

GUAYULE FROM THE TORREON DISTRICT OF MEXICO.

Guayule rubber has been manufactured and exported of late from the consular district of Turreon, Mexico, at the rate of about 500,000 pounds a month, the exports to the United States for the month of March amounting to 442,596 pounds valued at \$112,751. This district includes the southwestern quarter of Coahuila, the northwestern corner of Zacatecas and the entire state of Durango except the railroad terminals in the northwest and guayule rubber is one of the leading sources of wealth of the district.

RUBBER TEXTILE IMPORTS INTO ARGENTINA.

Statistics for the year 1917 and the first quarters of 1918 show that Argentina imported during those respective periods rubberized textiles as follows:

Articles.	First Quarter, 1918.	1917.
Elastic garters, silk or mixture.....pesos ¹	4,983	16,632
Elastic garters, thread	4,418	21,251
Silk elastic for boots.....	1,791	5,073
Thread elastic for boots.....	6,054	41,176
Rubberized silk or crepe.....	5,376	36,300
Waterproof cloth	31,912	117,755
Elastic fabric other kinds	27,271	126,525
Waterproof coats	2,847	14,484
Soles for canvas shoes.....	45,149	139,849
Totals	pesos 129,801	519,045

¹A peso equals \$0.965 United States currency.

PANAMA SIGNS THE COMMERCIAL TRAVELERS' TREATY.

The Panama Government has ratified the commercial travelers' treaty with the United States, the purposes of which are to facilitate the operations of commercial travelers and to foster trade. Panama is one of the fourteen countries which have agreed to such a treaty, Uruguay and Guatemala having already signed similar agreements. The United States Senate has ratified the Uruguay and Guatemala treaties.

Under these treaties commercial travelers may operate throughout the country for a single fee, and samples without commercial value will be admitted free of duty.

Rubber Planting Notes.

RUBBER PROFITABLE IN FEDERATED MALAY STATES.

THE RUBBER-GROWING INDUSTRY of the Federated Malay States experienced a year of great prosperity during 1917, in spite of the decline in price during the second half of the year.

The total acreage owned by rubber estates exceeding 100 acres in area amounted to 1,044,839, of which 612,268 acres are planted with rubber only, as against 543,729 in 1916, and of this area 408,574 acres are in bearing. The amount of rubber exported increased from 62,764 tons in 1916 to 79,831 tons in 1917, valued at \$83,803,546 and \$107,317,739, respectively.

An experimental shipment of rubber seed was sent to England. The oil extracted from this was sold at \$243 a ton.

The scale of wages has recently tended to become more nearly uniform. The rates in Perak are approximately 23 cents for men and 17 for women, but are sometimes as high as 26 and 20, respectively, while some women tappers draw 26 cents. The rate paid to efficient tappers at the end of the year was from 19 to 20 cents daily, but estates near the boundaries of Perak and Negri Sembilan paid from 23 to 26. However, the price of rice, the principal food, remained nearly stable.

RUBBER EXPORTED FROM DUTCH GUIANA.

The declared exports from Dutch Guiana during 1916 and 1917 show a decrease in the amount of rubber exported, as follows: 1916—18,578 pounds, value \$12,284; 1917—8,134 pounds, value \$6,345.

SINGAPORE RUBBER EXPORTS.

Statistics are now available for the month of February, 1919, showing the exports of rubber from Singapore, and the countries of destination, as follows:

	Great Britain.	United States.	Continent of Europe.	Totals.
Jelutong	21	642	...	659
Gutta percha	287	642	...	929
Para rubber	5,764	20,065	2,352	33,181
Totals	6,072	21,345	2,352	34,769

TOGOLAND RUBBER.

In spite of depressing conditions, rubber production increased in the British sphere of occupation in Togoland during 1917, when the production amounted to 64,272 kilograms, valued at £10,273. In 1916, the production amounted to 22,592 kilograms less, and the value was £2,900 lower. But local prices were lower during 1917 than during the previous year. The whole quantity produced was exported to Great Britain.

RUBBER IMPORTS AND EXPORTS FOR ECUADOR.

During 1917, Ecuador imported manufactured rubber goods to the amount of 54,191 pounds, value \$34,713, as against 90,493

pounds during 1916, value \$27,416. During the same periods she exported 909,940 pounds of crude rubber, value \$354,542, as against 837,454 pounds, value \$327,937.

UTILIZATION OF WASTE PRODUCTS ON STRAITS SETTLEMENTS RUBBER ESTATES.

Rubber-seed oil has been found to be a satisfactory substitute for linseed oil, and rubber estates in the Straits Settlements are beginning to experiment with the utilization of rubber seeds in the production of this oil. As there is an almost unlimited supply of the seeds, it is thought this industry may develop into one of importance, in which case oil-extracting machinery will find a good market.

ANNUAL RUBBER REPORT FOR THE UGANDA PROTECTORATE.

The exports of rubber from the Uganda Protectorate for the year ended March 31, 1918, as reported by the Department of Agriculture in Uganda, were 144,727 pounds of plantation rubber, value \$48,490, and 9,362 pounds of forest rubber, value \$4,492. This is double the amount for 1917, the figures being: plantation rubber, 71,955 pounds, value \$27,495; forest rubber, 400 pounds, value \$175.

Tapping results obtained in the Botanic Gardens, Entebbe, and on government plantations are satisfactory, the Kivuvu and Mabira plantation proving the success of rubber growing on a large scale.

PRODUCTION OF DUTCH RUBBER COMPANIES.

The following table by Frank W. Mahin, United States Consul at Amsterdam, shows the comparative production of Dutch rubber companies for 1917-1918. One-half kilo equals 1.1 pounds.

Companies.	1917. Half Kilos.	1918. Half Kilos.
Fransch-Nederlandsche Koloniale Cultuur-Maatschappij	534,600	390,109
Rubber Maatschappij "Basilam".....	221,600	338,300
Cultuur-Maatschappij "Bajabang"	543,400	609,000
N. V. Cultuur My "Nieuw-Tijssalak".....	273,949	314,436
Rubber Maatschappij "Tjibantjet".....	82,030	123,650
Cultuurmaatschappij Salatri Plantations (1917 four months)	5,175	30,926
Zuid-Preanger Rubbermaatschappij	230,951	322,247
Nederlandsche Rubbermaatschappij	1,525,200	1,611,300
Lampung-Sumatra Rubber Maatschappij.....	161,100	237,600
Sumatra-Caoutchouc Maatschappij	938,787	1,046,386
Java Caoutchouc Compagnie.....	196,000	208,500
Indische Rubber Compagnie.....	410,007	543,600
Tabak Maatschappij "Krapoh".....	58,223	74,923
Lampung-Sumatra Rubber Maatschappij.....	161,100	237,600
Pracanger Rubber Maatschappij.....	279,196	342,786
Ratoe Sumatra Rubber Maatschappij.....	.....	47,200
Sumatra Rubber Cultuur Maatschappij.....	354,400	433,600
Totals	5,977,718	6,912,154

PERCENTAGES OF CROP HARVESTED, AND OF RAINFALL RECORDED MONTHLY IN 1913, 1914, 1915, 1916, AND 1917 BY 62 REPRESENTATIVE ESTATES IN MALAYA.

	Crop.					Rainfall.					Average for Five Years 1913-1917.
	1913.	1914.	1915.	1916.	1917.	1913.	1914.	1915.	1916.	1917.	
January	7.97	7.94	8.81	8.62	8.56	8.34	8.60	6.47	3.65	7.97	6.70
February	7.29	7.58	7.44	6.67	7.84	7.36	3.52	5.20	2.47	9.84	4.73
March	7.61	6.87	6.48	5.57	7.75	6.86	8.09	6.41	9.72	13.08	10.39
April	6.95	7.19	6.33	6.47	7.36	6.86	9.44	12.44	11.01	13.19	11.17
May	7.76	7.95	7.51	7.88	8.11	7.87	8.73	4.85	5.24	8.36	6.86
June	7.78	7.96	7.93	8.23	8.39	8.07	8.00	7.91	9.43	3.69	6.70
July	8.69	8.61	8.63	8.68	8.51	8.62	4.25	3.34	8.36	11.75	6.87
August	9.02	8.39	9.00	8.88	8.14	8.69	4.45	5.33	9.57	10.60	8.35
September	8.70	9.07	9.05	9.25	8.58	8.95	8.73	7.28	8.09	6.46	7.48
October	8.93	9.21	9.62	9.33	9.13	9.24	10.95	15.62	9.92	10.50	10.79
November	9.27	9.29	9.10	9.98	8.50	9.24	15.36	13.38	12.49	8.25	11.61
December	10.03	9.94	10.10	10.44	9.13	9.92	9.88	9.77	6.79	6.44	8.35
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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RUBBER IN THE BENI DISTRICT OF BOLIVIA.*From the British Vice-Consul, Riberalta.*

TRADE DEPRESSION in the Beni district, which marked the opening quarter of 1918, continued with greater emphasis during the quarter ended 30th June.

Owing to late rains and the consequent water-logged condition of the estates, the extraction and transport of rubber to suitable points on the rivers for exportation were greatly retarded. This fact, however, did not materially influence the rubber market, as, owing to the lack of transport facilities at the Atlantic ports during the first quarter of the year, large stocks became accumulated, and for this reason chiefly trade depression was markedly felt.

DIFFICULTIES OF THE INDUSTRY.

The prices for fine rubber, both in the English and United States markets during the quarter ended 30th June were considered fairly satisfactory, even taking into consideration the high rates for transport and insurance. To the scarcity of



CUTTING RUBBER FROM PADDLES, BOLIVIA.

shipping at the Atlantic ports is attributed the most acute crisis which has ever been felt in the Bolivian rubber industry. For a time it was believed that Brazilian rubber was getting the preference of shipment, over Bolivian transit rubber, at the ports of Manáos and Pará, and while this would only seem to have been a natural procedure, no proof was ever forthcoming in support of the allegation which doubtless originated in subtle pro-German minds.

The two largest exporters of rubber from the Beni received instructions during the period under review to withhold all exportation, and the smaller firms, dealing through commercial houses in the Brazilian centres of Manáos and Pará, were compelled to adopt a similar action on account of the lack of buyers, whose business disappeared with the scarcity of shipping at these ports. A moderate estimate of the stocks of rubber and cacho stored in Riberalta and Cachuela Esperanza ready for export on June 30 was 1,000 tons. The inevitable result of this accumulation of stocks was a big slump in the local prices. Hesitancy characterized the action of the limited circle of buyers, and only nominal rates were offered, fine rubber being quoted at 1s. per pound, and cacho at 4d. per pound, thus affording a magnificent opportunity to the speculator with a little ready capital.

MOVEMENT OF BOLIVIAN RUBBER.

The following table shows the movement of Bolivian rubber from the three principal northern centres of export, by way of the Madeira-Mamore Railway, with outlet to the Amazon at Porto Velho, for the first six months of the year, the figures

for the corresponding periods of 1917 and 1916 being given for comparison. From these statistics it will be seen that the crisis really only began to be realized in the month of June, when exports were restricted to approximately 60 tons.

VIA VILLA BELLA (BENI DISTRICT).

	1916.	1917.	1918.
January	179,015	194,587	278,856
February	161,217	146,754	199,864
March	246,927	347,825	181,237
April	112,891	200,500	44,520
May	202,993	209,613	277,685
June	133,505	96,284	17,290

Totals 1,036,548 1,195,563 999,452

VIA MANOÁ (RIVER NEGRO DISTRICT).

	1916.	1917.	1918.
January	154,549	203,689	162,068
February	132,037	89,763	197,612
March	85,625	146,926	78,773
April	84,235	126,728	70,522
May	31,872	84,325	81,040
June	65,433	96,542	34,019

Totals 553,751 747,973 624,034

VIA GUAYARÁ MERIN (MAMORÉ DISTRICT).

	1916.	1917.	1918.
January	10,967	10,865	1,136
February	3,667	18,688	1,617
March	2,919	1,906	11,165
April	8,792	29,069	.....
May	1,130	12,956	7,968
June .....	.....	.....	.....

Totals 17,475 73,484 21,886

The following is a summary of the preceding tables:

	1916.	1917.	1918.
Villa Bella	1,036,548	1,195,563	999,452
Manoá	553,751	747,973	624,034
Guayará Merin	17,475	73,484	21,886
Totals	1,607,774	2,017,020	1,645,372

NEW WIRELESS COMMUNICATIONS.

The extension of radiographic communication with Brazil has been effected, an arrangement which offers great facilities to rubber merchants whose interests are bound up with the Amazon valley. At Trinidad, the capital of the province of the Beni, a wireless has been established on the Telefunken system, while at Cobiá, the frontier town of the Brazilian Acre territory, another is being built. In addition to these improvements, the Bolivian Government has made a further concession to the public by the reduction of wireless rates by 50 per cent, resulting in a notably increased business.

RUBBER IN SEYCHELLES.

Rubber exports from Seychelles during 1917 amounted to 8,631 pounds, valued at \$1,907.84; in 1916, to 6,025 pounds, and in 1915, to 625 pounds. New areas are being opened for planting and there are enough trees already set out to produce 224,000 pounds in a few years.

The rubber is remarkably free from disease and actually thrives on the lateritic soil of this country, which is quite worn out. Signs of two kinds of fungi have been reported which were identified as *Hirneola hispidula*, a harmless species growing on any dead branches, and *Hexagonia discopoda*, having a peculiar inclination for the dead branches of trees that are alive.

DISCOVERY OF TALC IN SOUTH AFRICA.

Since the outbreak of the present war a new industry has been developed in the Barberton district of South Africa, due to the discovery there of talc or soapstone. Large quantities are used in garages for the inside of tires as well as for many other purposes. Only the scarcity of shipping freight is said to hinder a large export trade.

AMERICAN CHAMBER OF COMMERCE IN ARGENTINA.

The American Chamber of Commerce in Argentina has recently changed its name to The Chamber of Commerce of the United States of America in the Argentine Republic.

BUY WAR SAVINGS STAMPS—BUILD FOR AMERICAN PROSPERITY and your own success.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED APRIL 22, 1919.

- N**O. 1,301,997. Split demountable rim for tires. R. S. Bryant, assignor by mesne assignments to The Standard Parts Co.—both of Cleveland, O.
- 1,301,228. Rubber-soled fabric shoe. M. H. Clark, Hastings-upon-Hudson, N. Y., assignor to The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn.
- 1,301,317. Fountain Pen. L. Plancher, New York City, assignor to M. Finstone, Brooklyn—both in New York.
- 1,301,343. Non-skid pneumatic tire. H. R. Waterman, San Francisco, Calif.
- 1,301,352. Demountable rim for tires. C. E. F. Ahlm, Cleveland, assignor to W. A. Neracher, Warren, and Alfred Fritzsche, Cleveland—all in Ohio.
- 1,301,354. Rubber-lined hose. C. M. C. Baird, Chicago, Ill.
- 1,301,467. Resilient tire. J. Lorenz, Milwaukee, Wis.
- 1,301,501. Cork for hot-water bottles, having meltable portion to determine whether water in bottle is too hot for safety. A. R. Robertson, Vancouver, B. C., Canada.
- 1,301,509. Hot-water bottle. C. F. Schuh, Newark, N. J., assignor to A. Albright, Jr., New York City.
- 1,301,686. Brake lining. J. E. Grosjean, Lima, assignor of $\frac{1}{2}$ to L. F. Montgomery, Fort Recovery—both in Ohio.
- 1,301,695. Demountable rim for tires. A. B. Henson, Franklin, Ky.
- 1,301,711. Stopper for hot-water bottles, etc. H. P. Kraft, Ridgewood, N. J.
- 1,301,762. Bottle with rubber packing-ring in groove of neck. T. E. Suffolk, Elizabeth, Pa.

ISSUED APRIL 29, 1919.

- 1,301,841. Coating joints of paper containers with rubber solution to make them waterproof. E. C. Hawkins, Noblesville, Ind.
- 1,301,865. Curved elastic fabric for corsets, etc. S. T. Metz, Brooklyn, N. Y., assignor to Victory Corset & Girdle Co., a New York corporation.
- 1,301,938. Dust-cap for tire valves. C. A. Herle, Rochester, assignor to D. H. Wright, Webster—both in New York.
- 1,301,998. Reinforced pump tire. J. F. Beesiman, East Chicago, Ind.
- 1,302,038. Sleeve-protector. J. Hayes, Cleveland, Ohio.
- 1,302,091. Pneumatic tire composed of two layers of two different gages of wire mesh with composition of rubber and canvas between. E. M. Reid, Pocatello, Idaho.
- 1,302,133. Anesthetic apparatus. A. C. Clark, Chicago, Ill.
- 1,302,156. Split demountable rim for tires. H. D. Hamilton, Kenosha, and J. Goodman, Racine—both in Wisconsin.
- 1,302,173. Resilient tire. W. J. Kent, Brooklyn, N. Y., assignor to Revere Rubber Co., Chelsea, Mass.
- 1,302,177. Resilient tire. J. A. Kolby, L. P. Larson, and C. P. Nielsen, all of Ephraim, assignors to Kolby Wheel Co., Salt Lake City—both in Utah.
- 1,302,369. Truss with elastic insert. A. J. O. Hoschek, Brooklyn, N. Y.
- 1,302,417. Fountain pen. C. H. North, Cleveland, O.
- 1,302,418. Pneumatic tire with separate tread member. W. H. Northall, assignor of $\frac{1}{2}$ to S. C. James and $\frac{1}{4}$ to H. Males—all of Evansville, Ind.
- 1,302,441. Dust-cap for tire valves. M. C. Schweinert, West Hoboken, and J. Velkhause, Weehawken—both in New Jersey, assignors to A. Schrader's Son, Inc., Brooklyn, N. Y.
- 1,302,447. Rim for pneumatic tires. W. I. Stark, Vancouver, and S. R. Ramsay, New Westminster, B. C.—both in Canada.
- 1,302,454. Garter. A. D. Theodore (legal name T. D. Anagnostopoulos), Eunice, La.
- 1,302,473. Stretchable laminated fabric composed of leather cemented to elastic webbing. M. Scheuer, New York City.

ISSUED MAY 6, 1919.

- 1,302,585. Combination pencil and fountain pen. A. L. Oppenheim, New York City.
- 1,302,763. Operating device for rotary disk erasers. F. H. Call, Portland, Ore.
- 1,302,792. Dust-cap for valves of pneumatic tires. W. P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
- 1,302,842. Fountain or stylographic pen. F. M. Peart, Liscard, Eng.
- 1,302,954. Combined closure and eraser for fountain pens. S. Newell, Wapello, Ia.
- 1,302,970. Puncture-proof lining for pneumatic tires. W. H. Pritchett, U. S. Marine Corps.
- 1,302,974. Resilient tire. U. S. Robinson, assignor of $\frac{1}{2}$ to M. Forcés—both of Lagrange, Ga.
- 1,303,027. Rubber connecting member for joining ends of belts. G. E. Carr, Boston, Mass.
- 1,303,139. Detachable tire rim. A. C. Wright and W. Dukes, assignors to The Warland Dual Rim Co., Limited, Aston—all in Birmingham, Eng.
- 1,303,144. Life-saving suit. A. G. Alfandri, New York City, assignor to C. Kenyon Co., Brooklyn—both in New York.
- 1,303,154. Repair boot for insertion between inner tube and casing of pneumatic tires. R. C. Bingham, Spokane, Wash.

ISSUED MAY 13, 1919.

- 1,303,224. Tire cover having elastic auxiliary warp threads for drawing it into circular shape. W. Achtmeyer, assignor to The Russell Manufacturing Co.—both of Middletown, Conn.
- 1,303,357. Demountable rim for tires. J. H. Miskimen, Glendive, Mont.
- 1,303,389. Inflatable bathing garment. J. Rebel, Cleveland, O.
- 1,303,546. Nipple for nursing-bottle. A. C. Eggers, Brooklyn, N. Y., assignor to The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn.
- 1,303,589. Improvement in demountable rim for tires. L. H. Perlman, New York City.
- 1,303,841. Non-skid cushion suction-heel. C. E. Siegfried, Akron, assignor of $\frac{1}{2}$ to W. Hoyt, Cleveland Heights—both in Ohio.

ISSUED MAY 20, 1919.

- 1,303,865. Armored pneumatic tire. W. de Rooy, New York City.
- 1,303,869. Rubber-heel lift with fastener embedded therein. G. S. Ellithorpe, assignor of $\frac{1}{2}$ to N. D. Fraser—both of Chicago, Ill.
- 1,303,871. Rubber sole for turn shoes. G. Ferguson, Wollaston, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.
- 1,303,903. Surgical bandage. B. W. Jansen, College Point, assignor to Traun Rubber Co., New York City—both in New York.
- 1,303,995. Pneumatic tire. W. J. Vincent, Cardiff, Wales.
- 1,303,998. Pneumatic tire. H. L. von Trott, Fort Madison, Ia.
- 1,391,011. Cushion wheel. A. L. Bennett, Kansas City, Mo.
- 1,304,038. Dental plate with suction device. A. J. Glaser, Comfort, Tex.
- 1,304,054. Uterine syringe. T. Imaizumi, Seattle, Wash.
- 1,304,115. Hydrometer to carry in automobile tool kit. J. Steiner, Long Island City, N. Y.
- 1,304,116. Auxiliary tire valve. T. J. Stephens, Spokane, Wash.
- 1,304,147. Inner tube. F. E. Bessler, Akron, O.
- 1,304,177. Pneumatic tire. I. Greenberg, Baltimore, Md.
- 1,304,193. Combined rubber ring and cover-piece to form bottle-cap. W. G. Nicholls, Winnipeg, Man., Canada.
- 1,304,292. Pen with magazine for soluble ink. A. L. Flegel, Racine, Wis.
- 1,304,308. Attachment for telephone, to do away with holding receiver. E. Gransaul, New York City.
- 1,304,424. Dust-cap for tire valves. J. T. Ward, Los Angeles, Calif.

ISSUED MAY 27, 1919.

- 1,304,576. Inflating coupling for tire-valve casing. H. P. Kraft, Ridge-wood, N. J.
- 1,304,593. Shoe protector in two parts with elastic webbing connection. J. J. Farmer, Chicago, Ill.
- 1,304,739. Self-filling fountain pen. H. L. Carman, New York City.
- 1,304,794. Dual rim for motor-car wheels. R. L. Morgan, Worcester, Mass.
- 1,304,801. Resilient tire. C. P. O'Brien, Omaha, Neb.
- 1,304,813. Tire molded to accommodate non-skid chain. C. E. Schneider, Chicago, Ill.
- 1,304,817. Non-puncturable ring for pneumatic tires. F. J. Slifka, Chicago, Ill.
- 1,304,915. Pneumatic insole. B. A. Spinney, Des Moines, Ia.
- 1,305,196. Pneumatic tire. A. L. Cole, Auburndale, Mass.

THE UNITED KINGDOM.

ISSUED MAY 7, 1919.

- 123,913. Crutch having pneumatic pad in arm-rest. F. A. Pennington, 10 Halesden Road, Heaton Chapel, and T. R. Day, Bankfield, Davyhulme—both in Lancashire.
- 124,004. Rim for solid tires. Dunlop Rubber Co., C. Macbeth, and H. C. Young, 14 Regent street, Westminster.
- 124,085. Improvements in fountain pens. D. Anderson, 114 West street, South Side, Glasgow.

APPENDIX TO ABRIDGEMENT OF SPECIFICATIONS (1915).

ISSUED MAY 14, 1919.

- 12,684. Rubber or rubber and canvas stream-line covering for stay-wires of airplanes, etc. (Not yet accepted.) A. R. Pettit, Waylands, Wraysbury, Buckinghamshire, and Martinsyde, Limited, Brooklands Aviation Grounds, Byfleet, Surrey.

ISSUED MAY 21, 1919.

- 124,239. Cutting-machine for fabrics, having rubber ribs on either side of cutters to clamp material during cutting and divert it from the cutting roller. P. M. Q. Cohen, Aquatite Mills, Derby street, Cheetham, Manchester.
- 124,271. Resilient wheel having rims separated by rubber rollers. N. W. McLeod, 15 Kingsbury Place, St. Louis, Mo., U. S. A.

ISSUED MAY 21, 1919.

- 124,282. Portable marine life-saving device in form of trunk, having water-tight cloak for occupant. C. T. Drijenko, Russian Government Commission, India House, Kingsway, London.
- 124,342. Tire valve. A. E. White, 83 Chancery Lane, London. (Holt Auto Devices Co., 1123 Conway Buildings, Chicago, Ill., U. S. A.)

- 124,347. Speaking tube having cup-shaped rubber mouth-piece, secured by head-straps, to prevent extraneous noises entering. W. Plumbridge, 10 Verdun avenue, Hamble, and C. H. Permain, Spring House, Spring Road, Sholing—both in Hampshire.
- 124,373. Catamenial appliance having waterproof shield and elastic straps. E. Andreae, 99 Trinity Road, Edinburgh.
- 124,395. Life-saving garment with inflatable air tube. Robinson & Cleaver, Donegall Place, Belfast, and J. J. Evans, 1 Park avenue, Church End, Finchley, London.
- 124,404. Waterproof garments having art-printed face outside instead of inside. H. Weinberg, Aquarock Mills, North street, Cheetham, Manchester.

ISSUED MAY 28, 1919.

- 124,607. Flapping-wing airplane having wings connected to body by elastic webbing. H. W. Hetherington, 75 Rochambeau avenue, Providence, R. I., U. S. A.
- 124,628. Nipple for feeding bottles. F. R. Graham-Yooll, Dulham Towers, East Trinity Road, Leith.
- 124,673. Rubber pads for crutches. F. C. Lynde, 51 King street, Manchester.
- 124,679. Band clip for securing rubber sleeves to metal pipes, etc. F. G. Pickering, 4 Fetterill street, Carlisle, Cumberland.

THE DOMINION OF CANADA.

ISSUED MAY 20, 1919.

- 190,388. Valve cap. A. E. Bronson, Cleveland, Ohio, U. S. A.

ISSUED MAY 27, 1919.

- 190,555. Wear plate and attaching means, combined with circular rubber heel. V. F. Maliszewski, Detroit, Mich., U. S. A.
- 190,577. Tire valve. S. C. Sladden, New York City, U. S. A.
- 190,583. Rubber sole-protector for boots and shoes. A. Thill, Barmouth, Merioneth, Wales.
- 190,606. Sole for turn shoes, having rubber body portion and fibrous insole strip. The United Shoe Machinery Co. of Canada, Limited, Maisonneuve, Quebec, assignee of G. Ferguson, Wollaston, Mass., U. S. A.
- 190,616. Footwear with rubber outsole and upper of rubberized fabric. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of M. H. Clark, Pelham, N. Y., U. S. A.
- 190,624. Air-valve for pneumatic tires. Firestone Tire & Rubber Co., assignee of L. Greenwald—both of Akron, O., U. S. A.

ISSUED JUNE 3, 1919.

- 190,704. Dental plate with rubber suction trough in each aperture. J. Lehner, Pittsburgh, Pa., U. S. A.

ISSUED JUNE 10, 1919.

- 190,823. Solid rubber tire. G. A. Mortier, Preston, Lancaster, Eng.
- 190,865. Stretchless machinery belting. The Lambert Multiplus Co., assignee of H. M. Lambert—both of Portland, Ore., U. S. A.

NEW ZEALAND.

ISSUED MAY 1, 1919.

- 39,972. Respirator. R. Donald, 30 Parliament Hill Mansions, Highgate Road, London, Eng.
- 41,151. Resilient wheel. W. J. Dyas, 80 Queen's Drive, Musselburgh, Dunedin, N. Z.

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

- 20,662/483,285. (April 30, 1917.) First certificate of addition to patent taken out December 30, 1915, for pneumatic tire casings. P. Moët and J. B. Haegy.
- 20,664/453,434. (May 9, 1917.) First certificate of addition to patent taken out May 23, 1912, for soles made of rubber, leather and steel combined. Société Française du Cuir Armé.
- 489,289. (March 15, 1918.) Rubber paving for roadways and other uses. G. Anderson, The Leyland & Birmingham Rubber Co., Limited, and Rubber Roadways Co., Limited.
- 489,301. (March 16, 1918.) Improved elastic tire for automobiles and other vehicles. R. Trautwein and H. Bokanoski.
- 489,306. (March 14, 1918.) A device to be placed between the tread and non-skid chains of automobile tires to prevent slipping. H. G. MacWilliam.
- 489,324. (March 18, 1918.) Spring tire for automobile wheels. G. Huber.
- 489,331. (March 19, 1918.) Life-saving belt. M. Halperin.
- 489,340. (March 19, 1918.) Improvements in resilient wheels. W. A. Black.
- 489,409. (March 15, 1918.) Improvements in rubber soles. M. H. Baudou.
- 489,550. (February 2, 1917.) Insubmersible life-saving valise. B. N. C. Mollard.
- 489,551. (March 2, 1917.) Parachute clothing for aviators. B. N. C. Mollard.
- 489,620. (April 5, 1918.) Puncture-proof pneumatic tire. L. S. Odell.
- 489,657. (April 10, 1918.) Improvements in pneumatic tire casings. A. S. Burdick and J. C. Hermann.
- 489,671. (April 9, 1918.) Pneumatic wheel with large tire having weak tension on soft earth. E. Perrot, 22 boulevard de la Trémouille, Dijon (Côte-d'Or).
- 489,690. (May 25, 1916.) Improvements in pneumatic tire treads. T. Duyrens and R. Hustinx.
- 489,733. Improvements in shoes for tires of motor vehicles. A. E. Powell.
- 489,844. (April 24, 1918.) Improvements in rubber tires for vehicles. A. A. Crozier.
- 489,854. (April 19, 1918.) Douche for washing the eyes with running water. J. J. Pouly and J. M. Daujard.

- 489,856. (April 20, 1918.) Economical sole without leather, flexible and interchangeable, adapted for rapid attaching or detaching. C. Aulagnier, Cluny, Saône-et-Loire.
- 489,861. (April 25, 1918.) Improvements in wheel tires reinforced with steel. J. H. Hamlin and J. C. Burford.

TRADE MARKS.
THE UNITED STATES.

- NO. 100,667. A monogram in white composed of two F's against a black disk—dental vulcanizers, rubber, etc. Fawcett & Fawcett, Brooklyn, N. Y.
- 100,631. Representation of a phenix rising from flames within a double out-lined circle, above the word PHOENIX—finished vulcanized boots and shoes, soles and heels. The Phoenix Rubber Co., Akron, O.
- 100,845. The word CHILDHOOD in script letters—infants' rubber pants, etc. Carson, Pirie, Scott & Co., Chicago, Ill.
- 109,591. Representation of a pennant bearing the word Federal—composition soles and heels. The Federal Rubber Co., Cudahy, Wis.
- 111,215. The word JIFFY—fountain pens. Jiffy Pen Co., Sioux City, Ia.
- 111,768. Representation of a punctured tire within which appears the word INSTANTITE superimposed upon the initials H & G, and the words TIRE PATCH SUPREME—tire-repair outfits and patches. Huff & Cutler, Boston, Mass.
- 112,330. The word LIBERTY within a double-outlined circle—rubber heels and composition soles. The Anchor Grip Heel Co., Elyria, O.
- 113,050. The words CLINCHER CROSS—golf balls. North British Rubber Co., Limited, Edinburgh, Scotland.
- 114,040. The words VULCO-CORD—rubberized woven fabric belting. The Gater Rubber Co., Denver, Colo.
- 114,515. Representation of a stencil bearing the words and characters AMERICAN ZINC L. & S. CO., AZO, L—zinc oxides for pigments in rubber compounding, etc. American Zinc, Lead & Smelting Co., Boston, Mass., and St. Louis, Mo.
- 114,518. Same as No. 114,515.
- 114,519. Same as No. 114,515 and No. 114,518.
- 114,610. The words WARNER FOUNTAIN SHAVING BRUSH—"Everything but the Razor"—shaving brushes. Warner-Patterson Co., Chicago, Ill.
- 115,220. The words HOOD RUBBER COMPANY, Boston within an oval—rubber boots and shoes, overshoes, and canvas shoes with rubber soles. Hood Rubber Co., Watertown, Mass.
- 115,256. Representation of a stencil bearing the word CHEROKEE between lines composed of dashes, beneath an Indian's head—stitched and impregnated canvas belting. The Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
- 115,260. Representation of a stencil bearing the word SEMINOLE between lines composed of dashes, beneath an Indian's head—stitched and impregnated canvas belting. The Rossendale-Reddaway Belting & Hose Co., Newark, N. J.
- 115,292. The words GOLD SEAL, MILLARD'S on a conventional design—chewing gum, etc. Millard Gum Vending Corp., New York City.
- 115,395. The word TIMESCO—rubber tires and tubes. Times Square Auto Supply Co., Inc., New York City.
- 115,487. The words PINE-NENE—rubber filler and wood-preserving oil. Spiritine Chemical Co., Wilmington, N. C.
- 115,678. The word NUSOLE over representation of two soles, one with a hole in it—waterproofing compound for shoe-soles. The Nusole Co., Colorado Springs, Colo.
- 115,943. The word IMPER—rubber dolls, balls, etc. Zadek Feldstein Co., Inc., New York City.
- 116,778. The word KANTSLIP above representation of an inch-worm—self-vulcanizing patches for pneumatic tires. Kant Slip Co., Manzanola, Colo.
- 116,869. The word YARWAY combined with lines forming a triangle between the two syllables—valves of various kinds, spray nozzles, etc. Yarnall-Waring Co., Philadelphia, Pa.
- 116,388. The word BROWNEDEL—rubber-impregnated belting. The Manhattan Rubber Manufacturing Co., New York City.
- 116,451. The word GLIDE—rubber belting. The Goodyear Tire & Rubber Co., Akron, O.
- 116,462. The word GOODYEARITE—sbestos packing. The Goodyear Tire & Rubber Co., Akron, O.
- 116,867. The word YARWAY—valves of different kinds, clamps, spray nozzles, etc. Yarnall-Waring Co., Philadelphia, Pa.
- 117,016. The word KWIKFIX—rubber cement. Alick Merriman, Freehold, N. J.

THE FRENCH REPUBLIC.
TO AMERICANS.

- 25,911. The word TYCOS—all kinds of recording meters, gages, etc. Taylor Instrument Cos., 95 Main street, Rochester, N. Y., U. S. A.
- 25,994. The word CAMACHINE—machines for slitting, winding, cutting, and perforating flexible materials; also parts and accessories. Cameron Machine Co., 61 Poplar street, Brooklyn, N. Y., U. S. A.
- 26,031. The words BALL BAND—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,032. Representation of a ball—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,033. The word VAC—boots and shoes of rubber or rubber and fabric. Mishawaka Woolen Manufacturing Co., Hill and Water streets, Mishawaka, Ind., U. S. A.
- 26,222. The words ROYAL CORD—rubber tires for vehicles and similar articles. United States Tire Co., 1790 Broadway, New York City, U. S. A.
- 26,280. The words VULCO-CORD—belting. The Gates Rubber Co., 999 South Broadway, Denver, Colo., U. S. A.

AUSTRALIA. TO AMERICANS.

- 28,985. Representation of a tire through which is thrust an arm and hand wearing a rubber glove and holding a spatula, with the word MILLER beneath—goods in class No. 40 manufactured from rubber and gutta percha. The Miller Rubber Co., 1269 South High street, Akron, Ohio, U. S. A. C. A. Hack, Collins street, Melbourne, Australia.)
- 24,416. Representation of a shield formed by bows and arrows, bearing the word MOHAWK—rubber tires. The Mohawk Rubber Co., Akron, Ohio, U. S. A. (P. M. Newton, Fink's Buildings, Elizabeth street, Melbourne, Australia.)

DESIGNS. THE UNITED STATES.

- O. 53,223. Tire. Patented April 22, 1919. Term 14 years. E. Hopkinson, New York City.
- 53,278. Tire. Patented May 6, 1919. Term 7 years. J. Stungo, Pittsburgh, assignor to Stungo-Radium Rubber Co. (now Washington Rubber Co.), Washington—both in Pa.
- 53,279. Tire. Patented May 6, 1919. Term 14 years. M. L. Wiener, assignor to the Firestone Tire & Rubber Co.—both of Akron, O.
- 52,292. Tire. Patented May 13, 1919. Term 14 years. E. H. Cooper, Kansas City, Mo.



- 53,316. Tire. Patented May 13, 1919. Term 14 years. W. O'Neill, assignor to The General Tire & Rubber Co.—both of Akron, O.
- 53,331. Tire. Patented May 20, 1919. Term 14 years. J. G. Gates, assignor to The Gates Rubber Co.—both of Denver, Colo.
- 53,348. Windshield cleaner. Patented May 20, 1919. Term 14 years. J. F. White, assignor by mesne assignment to White Products Co.—both of Chicago, Ill.
- 53,359. Rubber heel. Patented May 27, 1919. Term 14 years. W. H. Clarke, Akron, O.
- 53,372. Non-skid tire. Patented May 27, 1919. Term 14 years. C. B. Kloppenstein, assignor to Iowa Cord Tire Co.—both of Des Moines, Ia.

RECENT PATENTS IN URUGUAY.

According to a consular report, under date of March 21, 1919, the Ministry of Industries, Uruguay, granted patents on the following: improvements in suspenders; a substance known as "Tamponina" for the prevention and repair of punctures in tires; and a tire for vehicles.

JAPANESE TO PROTECT TRADE-MARKS.

It is reported that an association has been established at Osaka, Japan, for the purpose of protecting Japanese trade-marks against infringement, particularly in China where the subject matter of trade-marks is not regulated. Japanese business houses have suffered much by reason of the infringement of their trade-marks in China.

TRADE-MARKS IN URUGUAY.

A consular report from Asuncion, Uruguay, advises manufacturers who have not registered their trade-marks in that country to omit them on goods sent there, as it sometimes happens that individuals in Uruguay register such marks to prevent competitors from handling the line or for the purpose of exacting a premium for the right to sell goods bearing such marks.

PROTECTION OF TRADE-MARKS IN CHINA AND JAPAN.

A consular report calls attention to the importance of adequate protection of trade-marks in China. This may be accomplished by registering them with the customs officials in Shanghai and Tientsin, after which the superintendents of customs issue proclamations for their protection. Trade-marks should also be registered in Japan to secure adequate protection there.

HONDURAS HAS NEW TRADE-MARK LAW.

A new trade-mark law enacted in Honduras, effective August 1, 1919, provides for a registration fee of \$50 gold for each trade-mark registered. This fee will not be required, however, on applications filed prior to that date.

METHOD OF DETERMINING TON-MILEAGE OF TRUCKS.

A SIMPLE AND ACCURATE METHOD for figuring the ton-mileage of motor trucks is described by The B. F. Goodrich Rubber Co. Before arriving at the cost of truck operation it is essential to have the ton-mile figure for comparison with the average daily cost of operation. Such a system will allow the owner to compare the operating cost of one make of truck with another, and as well, truck haulage with horse and wagon delivery.

There are two classes of units used for measuring truck haulage. One is the absolute ton-mile, while the other is the commercial ton-mile. They should not be confused.

The absolute ton-mile is similar to that used in figuring railroad freight mileage. Because of the various systems of delivery, contingent on stops and loads to be dropped en route, what is called the commercial ton-mile is adopted as a standard of measurement. The absolute or railroad ton-mile is one ton carried one mile; thus, one ton carried five miles equals five ton-miles, and five tons carried one mile also equals five ton-miles. Similarly, five tons carried three miles makes fifteen ton-miles.

Absolute ton-miles should be figured in connection with motor truck haulage only when uniform hauls are made, that is, when one truck carries the same load over the same distance. By multiplying the number of miles covered by the number of tons carried the owner can easily determine the cost per ton-mile by the additional operation of dividing the average daily ton-mileage into the average daily cost of operation. The result will be the cost per ton-mile. These figures are indispensable in keeping an accurate account of delivery expense and profit.

The commercial ton-mile is figured for trucks employed in continually making deliveries of portions of their loads. The big majority of trucks are operated under this condition. It can readily be seen that absolute ton-mileage would necessitate separate figuring for each stop and would be decidedly impracticable. Hence, the commercial ton-mile used.

The information from which to figure the commercial ton-mile comes from the driver's card. All that is needed is the number of deliveries made, the weight of each load and the total mileage for the day. First, determine the average tons per trip. This is found by reducing the total number of pounds hauled to terms of tons, i. e., 12,000 pounds would be termed as 6 tons. The average tons per trip, or the average load, is found by dividing the number of tons hauled by the number of deliveries made, i. e., 6 (tons) divided by 5 (deliveries) equals one and one-fifth tons, or the average load. This result multiplied by the total mileage for the day gives the ton-miles. For example, if the mileage covered by the truck is 60, the ton-miles for the day amount to 72, or 60 times one and one-fifth. When the truck makes but one trip a day, multiply the mileage by the number of miles carried, thereby using the absolute ton-mile basis.

Ton-miles are nothing more than the units for measuring truck performance. The principle of ton-mileage may be applied to any class of motor-truck haulage whether the units are baskets, bundles, kegs, cases, or thousands of feet of lumber. For the concern which does not do its hauling in tons the same measure of haulage may be had by substituting for the ton the unit best served to measure the delivery system. Thus, instead of the ton-mile we have the package-mile, multiplying the number of packages delivered by the number of miles covered in delivering them, or the keg-mile, or the case mile.

INTERCONTINENTAL CLOSES TORREON FACTORY.

The directors of the Intercontinental Rubber Co. have decided to close the factory at Turreon, Mexico, for an indefinite period, owing to the low price of crude rubber and present conditions in Mexico.

Review of the Crude Rubber Market.

NEW YORK.

DURING JUNE the tone of the crude rubber market has been dull and inactive. About the middle of the month the downward trend of prices resulted in large purchases by short interests. This was followed by a sharp reaction in the price of plantation first latex crepe, with the price falling promptly to the new low level of 40 cents. This is attributable to ample supplies in the hands of manufacturers and the reported excessive stocks in the Far East, London and New York. The month closed with nominal quotations.

PLANTATIONS. June 7, first latex crepe, spot 43 and 44 cents; June arrivals, 43 cents; July to December arrivals, 45 and 46 cents; 1920 arrivals, January to June, 47 and 46 cents; January to December, 47 and 48 cents. June 21, spot, first latex crepe was quoted at 40 and 41 cents; July to December arrivals, 43 and 42 cents; January to June, 1920, arrivals, 44 cents; January to December, 1920, arrivals, 46 cents.

June 7, spot ribs, 42 and 43 cents; July to September arrivals, 43½ and 43 cents; July to December arrivals, 44 and 45 cents; January to June, 1920, arrivals, 46 and 45 cents; January to December, 1920, 46 and 47 cents; June 21, this grade was: spot, 39 and 40 cents; July to September arrivals, 42 and 41 cents; January to June, 1920, arrivals, 43 cents; January to December, 1920, arrivals, 45 cents.

June 7, No. 1 amber crêpe, spot, 39 cents; June 21, spot was 37 cents; June 7, No. 1 roll brown crêpe, spot 30 and 29½ cents. June 21 this grade, spot, was quoted 28 and 30 cents.

The spot market was weak on plantation grades. Futures lower but not as weak as spot.

PARÁS. On June 7 spot prices were: upriver fine, 56 and 56½ cents; islands fine, 46 and 47 cents; upriver coarse, 33½ and 34 cents; islands coarse, 21½ and 22 cents; Cametá coarse, 21½ and 23 cents; June 23, the spot quotations on these grades were: Upriver fine, 56 cents; islands fine, 47 cents; upriver coarse, 33½ cents; islands coarse, 21 cents; Cametá coarse, 22½ cents.

There was plenty of spot stock held at the above figures. The market at Pará held at higher figures, 66 cents being quoted for upriver fine.

NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on June 25, the current date:

	July 1, 1918.	June 1, 1919.	June 25, 1919.
PLANTATION HEVEA—			
First latex crêpe.....	63 @	46 @47	40 @
*Hevea first crêpe.....	60 @	44 @	38 @
Amber crêpe No. 1.....	60 @	43 @	37 @
Amber crêpe No. 2.....	58 @	42 @	36 @
Amber crêpe No. 3.....	57 @	41 @	35 @
Brown crêpe, thick clean...	60 @	41 @	36 @
Brown crêpe, thin clean...	60 @	41 @	36 @
Brown crêpe, thin specky...	50 @	39 @	34 @
Brown crêpe, rolled.....	44 @	32 @	29½ @
Smoked sheet, ribbed standard quality.....	62 @	45 @46	39 @
*Hevea ribbed smoked sheets.....			
Smoked sheets, plain standard quality.....	61 @	43 @44	37 @
*Hevea plain or smooth smoked sheets.....			
Unsmoked sheet, standard quality.....	60 @	42 @43	36 @
*Hevea unsmoked sheets.....			
Colombo scrap No. 1.....	46 @	32 @	30 @
Colombo scrap No. 2.....	44 @	29 @30	28 @29
BRAZILIAN PARÁS—			
Upriver fine.....	68 @	56½ @	55½ @56
Upriver medium.....	63 @	52 @	51 @
Upriver coarse.....	40 @	34 @	34 @

	July 1, 1918.	June 1, 1919.	June 25, 1919.
Upriver weak fine.....	56 @	44 @	46 @
Upper caucho ball.....	40 @	34½ @35	34 @
Islands, fine.....	59 @	47 @	48 @
Islands medium.....	54 @	43 @	43 @
Islands, coarse.....	27 @	21 @	21 @
Cametá, coarse.....	28 @	22 @22½	22½ @
Lower caucho ball.....	36 @	31 @	30½ @
Peruvian fine.....	55 @	53½ @	54 @
Tapajos fine.....	56 @	53½ @	53 @

AFRICANS—

Niger flake, prime.....	28 @	23 @	**24 @
Benguela, extra No. 1, 28%...	33 @	32 @	**26 @
Benguela No. 2, 32½%...	29 @	30 @	**28 @39
Congo prime, black upper...	50 @	**42 @	**34 @
Congo prime, red upper...	48 @	**40 @	
Rio Nunez ball.....	55 @	**50 @	
Rio Nunez sheets and strings	@	**50 @	@
Conakry niggers.....	@	**50 @	@
Massai sheets and strings...	55 @	**50 @	@

CENTRALS—

Corinto scrap.....	@	32 @	35 @37
Esmeralda sausage.....	39 @	32 @	35 @37
Central scrap.....	39 @	31 @	34 @
Central scrap and strip, 75%...	@	29 @	32 @
Central wet sheet, 25%...	@	23 @	28 @
Guayule, 20% guarantee...	35 @	28 @	25 @
Guayule, dry.....	48 @	40 @	36 @

MANICOBAS—

Ceara negro heads.....	40 @	36 @	**25 @
Ceara scrap.....	34 @	32 @	**30 @
Manicoba (basis 30% loss) washing and drying...	38 @	34 @	34 @
Mangabeira thin sheet.....	42 @	38 @	38 @

EAST INDIAN—

Assam crêpe.....	**56 @57	@	**56 @
Assam onions.....	@	@	@
Penang block scrap.....	**39 @	39 @	**38 @

BALATA—

Block, Ciudad Bolivar.....	71 @	80 @85	75 @
Colombia.....	61 @	60 @62	50 @60
Panama.....	50 @	40 @45	50 @60
Surinam sheet.....	95 @	1.00 @	1.05 @1.10
Surinam amber.....	97 @	1.03 @	@

PONTIANAK—

Banjermassin.....	15 @	14 @15	14 @
Palembang.....	16 @	15 @	@
Pressed block.....	25 @	16 @17	25 @
Sarawak.....	@	12 @14	12 @

GUTTA PERCHA—

Gutta Siak.....	23 @	24 @	25 @
Red Macassar.....	3.00 @	3.15 @	3.15 @

* Rubber Association of America nomenclature.
** Nominal.

RECLAIMED RUBBER.

The market for reclaimed rubber continues very quiet. This condition will continue until the three controlling factors are modified. One of these factors is the extremely light demand for reclaim by the mechanical goods division of the rubber industry. This condition it is hoped will shortly disappear following with the advent of peace.

The other factors of market influence are the high prices at which dealers are holding scrap rubber which are well nigh prohibitive, and the low price of crude rubber.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Subject to change without notice.

standard reclaims:		
Flotation.....lb.	.35 @	.40
Friction.....lb.	.30 @	.35
Mechanical.....lb.	.12 @	.13
Red.....lb.	.20 @	.25
Shoe.....lb.	.14½ @	.15½
Tire, auto.....lb.	.16½ @	.17½
Truck.....lb.	.12½ @	.13½
White.....lb.	.24 @	.25

COMPARATIVE HIGH AND LOW SPOT RUBBER PRICES.

PLANTATIONS—	June.			
	1919. ¹	1918.	1917.	
First latex crepe...	\$0.44½ @ \$0.35	\$0.63 @ \$0.63	\$0.75 @ \$0.65	
Smoked sheet ribbed	.43½ @ .35	.62 @ .62	.75 @ .65	
PARAS—				
Upriver fine .....	.56½ @ .55½	.68 @ .68	.73 @ .68	
Upriver coarse .....	.34½ @ .32½	.40 @ .40	.52 @ .48	
Islands fine .....	.47½ @ .47	.59 @ .59	.69 @ .69	
Islands, coarse .....	.21½ @ .21½	.27 @ .27	.33 @ .29	
Cameta .....	.21½ @ .21½	.28 @ .28	.36 @ .33	

¹Figured only to June 24.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

During July the demand for paper has been light and mostly from out-of-town banks, the best rubber names going at 5½ per cent to 5¾ per cent, and those not so well known at 6 per cent.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [May 1, 1919]:

Following advice of declining values in London and New York, the weekly rubber auction opened yesterday with a slightly weaker tone, and, in the earlier stages of the sale, not more than 76½ cents was paid for fine ribbed smoked sheet. Later in the day, however, dealers came in rather heavily and prices strengthened considerably, the advancement being maintained to the close. Fine pale crepe sold up to 79 cents (79½ cents was paid for one lot), showing a decline of ½ cent on the week. The top price for ribbed smoked sheet is ½ cent up at 78 cents (78½ cents was paid for one small lot), but very few lots sold at a higher figure than 77 cents. Clean brown and dark crépes were in strong demand and record advances of 1½ to 2 cents. Barky crépes received more attention than usual, and are 2 cents up on the week. Small quantities of plain smoked and un-smoked sheet sold at fairly good prices. The total quantity cataloged was 905 tons, of which 623 tons were sold.

The following is the course of values:

	In Singapore per Pound. ¹	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked.....	76c @ 78c	2/0 @ 2/0½
Sheet, good ribbed smoked.....	71 @ 75½	1/10½ @ 1/11½
Sheet, plain smoked.....	58 @	1/6½ @
Sheet, ribbed.....	@	@
Sheet, plain, unsmoked.....	53 @ 57½	1/5½ @ 1/6½
Crépe, fine pale.....	77 @ 79	2/0½ @ 2/1½
Crépe, good pale.....	73 @ 76½	1/11½ @ 1/12½
Crépe, fine brown.....	65½ @ 69	1/9½ @ 1/10½
Crépe, good brown.....	58 @ 65	1/7½ @ 1/9½
Crépe, dark.....	45 @ 59	1/3½ @ 1/7½
Crépe, bark.....	39 @ 47	1/1½ @ 1/4
Scrap, virgin and pressed.....	35 @ 42½	1/0½ @ 1/2½
Scrap, loose.....	29 @ 30	1/11 @ 1/11½

¹Quoted in S. S. Currency.

RUBBER IMPORTS AND EXPORTS FOR CEYLON.

IMPORTS.		January 1 to April 14.	
Crude rubber:		1918.	1919.
From Straits Settlements	pounds	1,336,403	662,893
India		655,509	532,349
Burma and other countries		3,107	.....
Totals		1,995,019	1,195,242
EXPORTS.		January 1 to April 14.	
Crude rubber:		1918.	1919.
To United Kingdom	pounds	4,800,486	10,235,965
France .....		.....	285,100
Victoria		89,735	.....
New South Wales		118,796	62,742
United States		8,076,147	25,760,401
Canada and Newfoundland.....		260,016	1,206,741
India		659	1,677
Straits Settlements .....		.....	424
Japan		129,858	105,320
Totals		13,475,697	37,658,370

¹ These figures include cargoes for transshipment to New Zealand, other ports of Australia, and dependencies.

(Compiled by the Ceylon Chamber of Commerce.)

PLANTATION RUBBER EXPORTS FROM JAVA.

	February.		Two Months Ended February 28.	
	1918.	1919.	1918.	1919.
To Holland	kilos	120,000	.....	120,000
England	1,577,000	200,000	1,650,000	846,000
United States	697,000	1,748,000	1,768,000	3,171,000
Canada .....	.....	.....	.....	20,000
Singapore	118,000	393,000	319,000	932,000
Japan	211,000	39,000	230,000	66,000
Australia .....	.....	58,000	.....	66,000
Other countries .....	.....	2,000	.....	11,000
Totals	2,603,000	2,560,000	3,967,000	5,232,000
From Batavia	1,236,000	1,620,000	2,009,000	2,952,000
Samarang .....	.....	.....	50,000	23,000
Soerabaya	1,367,000	820,000	1,908,000	2,031,000
Other ports .....	.....	120,000	.....	226,000
Totals	2,603,000	2,560,000	3,967,000	5,232,000

EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF APRIL, 1919.

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	Fine.	Medium.	Coarse.	Caucho.	TOTALS.	
Stowell & Co.....kilos	47,016	40,033	22,411	114,506	223,966	102,000	.....	23,680	202,130	327,810	551,776
General Rubber Co. of Brazil....	46,409	43,743	66,318	93,530	250,000	121,000	3,360	10,640	.....	135,000	385,000
T. A. Mendes & Co.....	.....	.....	.....	16,414	136,000	330,810	.....	.....	.....	330,810	280,000
Tancuado, Porto & Co.....	60,636	14,742	44,208	.....	136,000	136,690	6,630	510	170	156,082	169,598
Adelbert H. Alden, Limited.....	347	9,207	5,961	1	13,516	156,082	.....	.....	.....	156,082	101,750
T. G. Araujo .....	.....	.....	.....	.....	.....	92,268	8,278	1,204	.....	101,750	101,750
Higson & Fall.....	.....	.....	.....	.....	.....	44,788	3,494	3,075	300	51,657	51,657
B. Lévy & Co.....	.....	.....	.....	.....	.....	23,690	3,368	11,463	8,694	47,215	47,215
I. Esabba .....	.....	.....	.....	.....	.....	19,034	2,140	1,465	.....	22,639	22,639
Antonio Pereira	8,181	1,247	199	.....	9,627	.....	.....	.....	.....	.....	9,627
Totals	162,589	168,972	137,097	224,451	633,109	1,026,362	27,270	52,037	211,294	1,316,963	1,950,072
In transit, Iquitos	5,900	16,593	4,405	3,090	29,988	11,597	12,970	5,296	33,936	63,799	93,787
Totals	168,489	125,565	141,502	227,541	663,097	1,037,959	40,240	57,333	245,230	1,380,762	2,043,859

(Compiled by Stowell & Co., Manaos, Brazil.)

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that 10,848 tons of rubber (of which 1,772 tons were transshipments), were exported from the Straits Settlements in the month of April, as compared with 20,908 tons in March, and 6,584 tons in the corresponding month last year. The total export for four months of the present year was 61,821 tons, against 22,078 tons in 1918, and 24,459 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	3,562	4,302	14,404
February	6,495	2,334	15,661
March	8,299	8,858	20,908
April	6,103	6,584	10,848
Totals	24,459	22,078	61,821

FEDERATED MALAY STATES RUBBER EXPORTS.

An official report from Kuala Lumpur states that 7,664 tons of rubber were exported from the Federated Malay States in the month of April, compared with 10,679 tons in March and 7,428 tons in the corresponding month last year. The total export for four months of the present year was 36,315 tons, compared with 29,545 tons in 1918, and 26,288 tons in 1917. Appended are the comparative statistics:

	1917.	1918.	1919.
January	5,995	7,588	7,163
February	7,250	6,820	10,809
March	7,088	7,709	10,679
April	5,953	7,428	7,664
Totals	26,288	29,545	36,315

CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

PARAS AT NEW YORK.

	Cases.					Totals.
	Fine.	Medium.	Coarse.	Caucho.	Mixed Rubber.	
JUNE 4. By the S. S. Benedict, from Pará.						
¹ Pool & Kelly.....	53,907	1,583	8,590	120,770	25,093	209,943
Alden's Successors, Ltd. ....	.....	58	149	216	.....	165,240
¹ Alden's Successors.....	.....	20,260	74,092	71,263	.....	165,615
¹ Meyer & Brown.....	24,500	.....	38,100	313,600	61,274	356,200
Gaston, Williams & Wigmore .....	.....	7	192	151	.....	100,718
Gaston, Williams & Wigmore .....	.....	.....	104	138	.....	117,260
H. A. Astlett & Co.....	29	42	17	.....	.....	74,131
H. A. Astlett & Co.....	70	1	43	50	.....	36,940
Herbst & Bros.....	.....	.....	92	.....	.....	24,288
F. R. Henders.....	.....	.....	62	.....	.....	24,024
Paul Bertuc .....	.....	.....	.....	.....	43,436	389,400
G. Amant .....	.....	.....	.....	.....	98	8,741
Various	50	.....	87	463	.....	154,396

¹Pounds.²Including medium.

4482 packages.

³Packages.

Cases.					Mixed Rubber.	Totals. Pounds.	General Rubber Co.	Shipment from:	Shipped to:	Pounds.	Totals.
Fine.	Medium.	Coarse.	Caucho.								
JUNE 11. By the S. S. <i>Cuthbert</i> , from Iquitos.							Meyer & Brown.....	Far East	New York	239,380	
H. A. Astlett & Co.	88	...	...	...	...	30,800	The Goodyear Tire & Rubber Co.	Far East	New York	235,800	
Various	40	...	...	...	...	14,000	Poel & Kelly.....				
JUNE 11. By the S. S. <i>Cuthbert</i> , from Manaoas.							Poel & Kelly.....		Pt. Sweet'n'h'm	Seattle	181,440
Meyer & Brown.....	45	...	...	...	...	15,700	Bush & Co.....		Singapore	Seattle	110,600
Poel & Kelly.....	...	...	...	589	...	221,550	Frank P. Dow & Co....		Pt. Sweet'n'h'm	Seattle	23,520
General Rubber Co.	648	10	145	300	...	367,400	Fred Stern & Co.....		Far East	Akron	67,320
G. Amsinck & Co., Inc.	57	8	114	8	...	63,967	Owens & Hendry.....		Pt. Sweet'n'h'm	Seattle	36,540
Gaston, Williams & Wigmore	...	...	258	64	...	90,640	Edward Maurer Co., Inc.		Singapore	New York	25,640
H. A. Astlett & Co. . . . .	...	66	...	...	...	23,188				Seattle	13,500
Various	483	75	112	129	...	274,956					4,443,708
PLANTATIONS.											
MAY 5. By the S. S. <i>City of Norwich</i> , at New York.							MAY 21. By the S. S. <i>Senator</i> , at Seattle, via Manila.				
United States Rubber Co.	Colombo	New York	40,320				F. R. Henderson & Co.	Singapore	Seattle	101,340	
Charles T. Wilson Co., Inc.	Colombo	New York	141,660				General Rubber Co.	Singapore	New York	84,060	
Hood Rubber Co.	Colombo	Watertown	25,180				Meyer & Brown.....	Singapore	Seattle	50,400	
L. Littlejohn & Co., Inc.	Colombo	New York	673,560				L. Littlejohn & Co., Inc.	Singapore	Seattle	28,440	264,240
Poel & Kelly.....	Colombo	New York	395,100								
Meyer & Brown.....	Colombo	New York	481,600				MAY 23. By the City of <i>Manila</i> , at New York.				
Edward Maurer Co., Inc.	Colombo	New York	175,860				Charles T. Wilson & Co., Inc.	Colombo	New York	111,142	
Robinson Co.	Colombo	New York	36,000				Hood Rubber Co.	Colombo	New York	89,820	
William Brandt's Sons..	Colombo	New York	28,800				J. T. Johnstone & Co., Inc.	Colombo	New York	51,120	
Adolph Hirsch & Co....	Colombo	New York	5,400				William H. Stiles & Co.	Colombo	New York	46,800	
Gove & French, Inc....	Colombo	New York	23,360				Meyer & Brown.....	Colombo	New York	360,000	
Slater, Forwood & Co....	Colombo	New York	65,160				L. Littlejohn & Co., Inc.	Colombo	New York	115,040	
Various	Colombo	New York	19,440			2,111,440	Robinson & Co.	Colombo	New York	66,780	
MAY 9. By the S. S. <i>Arabia Maru</i> , at Tacoma.							Rogers-Pyatt Shellac Co.	Colombo	New York	14,400	
Robinson & Co.	Kobe	New York	40,500				Various	Colombo	New York	72,000	927,102
Edward Maurer Co., Inc.	Kobe	New York	40,500				MAY 23. By the S. S. <i>Ision</i> , at New York.				
William H. Stiles & Co.	Kobe	New York	77,580			158,580	The B. F. Goodrich Co.	London	New York	119,160	
MAY 14. By the S. S. <i>Tancred</i> , at San Francisco.							Poel & Kelly.....	London	New York	304,740	
F. R. Henderson & Co.	Singapore	New York	365,400				T. D. Downing & Co....	London	New York	55,440	
Henderson Brothers	Singapore	San Fran.	108,360				Various		New York	511,020	990,360
Raw Products Co.	Singapore	San Fran.	49,060				MAY 25. By the S. S. <i>Buyo Maru</i> , at San Francisco.				
L. Littlejohn & Co., Inc.	Singapore	San Fran.	25,200				F. R. Henderson & Co.	Singapore	San Fran.	15,660	
L. Littlejohn & Co., Inc.	Singapore	New York	238,520				F. R. Henderson & Co.	Singapore	New York	79,200	
Peninsular Trading Agency	Singapore	San Fran.	53,280				L. Littlejohn & Co., Inc.	Singapore	New York	47,340	
Fred Stern & Co.	Singapore	San Fran.	333,000				J. T. Johnstone & Co., Inc.	Singapore	San Fran.	155,600	
Meyer & Brown.....	Singapore	San Fran.	164,340				J. T. Johnstone & Co., Inc.	Singapore	New York	201,600	
Charles T. Wilson Co., Inc.	Singapore	New York	100,800				Mitsui & Co., Limited..	Singapore	New York	78,660	
Winter, Ross & Co.	Singapore	New York	125,820				Poel & Kelly.....	Singapore	New York	153,360	
The B. F. Goodrich Co.	Singapore	Akron	993,060				W. R. Grace & Co.	Singapore	San Fran.	60,480	
Firestone Tire & Rubber Co.	Singapore	Akron	1,143,180				United Malaysian Rubber Co., Ltd.	Singapore	San Fran.	112,000	
The Goodyear Tire & Rubber Co.	Singapore	Akron	81,180			3,781,200	J. T. Johnstone & Co., Inc.	Penang	New York	35,640	
MAY 17. By the S. S. <i>Kotori Maru</i> , at Seattle.						360	W. H. Stiles & Co.	Singapore	New York	474,300	
Various	Penang	Seattle	36				Rubber Importers & Dealers' Co., Inc.	Singapore	New York	100,800	
MAY 19. By the S. S. <i>Nias</i> , at San Francisco.							Charles T. Wilson Co., Inc.	Singapore	New York	252,720	
The Goodyear Tire & Rubber Co.	Soerabaya	Akron	101,160				Frank P. Dow & Co.	Singapore	San Fran.	49,680	
The Goodyear Tire & Rubber Co.	Batavia	Akron	294,660				Robinson & Co.	Singapore	San Fran.	89,820	
Aldens' Successors, Limited	Soerabaya	New York	7,200				Meyer & Brown.....	Singapore	New York	284,760	
F. R. Henderson & Co.	Batavia	Seattle	106,020				Rubber Trading Co.	Singapore	New York	54,000	
Aldens' Successors, Limited	Batavia	Seattle	42,480				Firestone Tire & Rubber Co.	Singapore	Akron	271,080	
L. Littlejohn & Co., Inc.	Medan	San Fran.	28,440				The Goodyear Tire & Rubber Co.	East Indies	Akron	392,400	
J. T. Johnstone & Co., Inc.	Belavan	San Fran.	25,020				Hood Rubber Co.	Str'ts Set'lmt	Watertown	435,240	
Various	Batavia	San Fran.	156,240				Dunlop Tire & Rubber Goods Co., Limited..	Malacca	Toronto	12,960	
Various	Samarang	San Fran.	66,240				Various	Far East	New York	126,540	3,483,840
Various	Soerabaya	San Fran.	468,520			1,295,980	MAY 29. By the S. S. <i>Crest Hall</i> , at New York.				
MAY 20. By the S. S. <i>Colusa</i> , at San Francisco.							Hood Rubber Co.	Colombo	Watertown	113,940	
Aldens' Successors, Limited	Colombo	New York	30,780				F. R. Henderson & Co.	Colombo	New York	111,600	
Aldens' Successors, Limited	Penang	New York	270,000				Charles T. Wilson Co., Inc.	Colombo	New York	109,800	
The B. F. Goodrich Co.	Penang	Akron	110,700				Meyer & Brown.....	Colombo	New York	550,720	
Henderson Bros.	Penang	San Fran.	17,640				L. Littlejohn & Co., Inc.	Colombo	New York	449,820	
Winter, Ross & Co.	Singapore	San Fran.	77,580				Poel & Kelly.....	Colombo	New York	172,980	
Winter, Ross & Co.	Penang	San Fran.	103,500				Thomas T. Lipton.....	Colombo	New York	129,960	
Raw Products Co.	Penang	New York	32,040				Gaston, Williams & Wigmore	Colombo	New York	62,820	
Pacific Trading Corp. of America	Penang	New York	6,786				Peninsular Trading Co.	Colombo	New York	45,000	
Various	Penang	New York	28,440			677,466	Slater, Forwood & Co.	Colombo	New York	40,320	
MAY 20. By the S. S. <i>Tyndareus</i> , at Seattle, via Hongkong.							C. C. Travani & Co.	Colombo	New York	37,980	
The B. F. Goodrich Co.	Hongkong	Akron	1,011,600				E. S. Kuh & Valk Co., Inc.	Colombo	New York	31,500	
The B. F. Goodrich Co.	Penang	Akron	6,714				Edward Maurer Co., Inc.	Colombo	New York	11,880	
Mitsui & Co., Limited..	Singapore	Seattle	862,740				Various	Colombo	New York	978,480	2,846,800
Firestone Tire & Rubber Co.	Hongkong	Akron	171,540				MAY 31. By the S. S. <i>Saxonia</i> , at New York.				
Firestone Tire & Rubber Co.	Penang	Akron	12,294				The B. F. Goodrich Co.	London	New York	312,300	
William H. Stiles & Co.	Far East	New York	132,300				F. R. Henderson & Co.	London	New York	47,700	
J. T. Johnstone & Co., Inc.	Far East	New York	100,800				Smith & Schipper.....	London	New York	122,940	
Aldens' Successors, Limited	Singapore	Seattle	69,840				L. Littlejohn & Co., Inc.	London	New York	34,380	
Aldens' Successors, Limited	Pt. Sweet'n'h'm	Seattle	59,940				Poel & Kelly.....	London	New York	14,760	
Aldens' Successors, Limited	Singapore	Seattle	720				Various	London	New York	20,116	552,196
L. Littlejohn & Co., Inc.	Singapore	Seattle	1,041,320				JUNE 2. By the S. S. <i>Djemmer</i> , at New York.				
MAY 31. By the S. S. <i>Saxonia</i> , at New York.							G. Greidam	Soerabaya	New York	5,760	
The B. F. Goodrich Co.	Hongkong	Akron	1,011,600				L. Littlejohn & Co., Inc.	Batavia	New York	27,540	
The B. F. Goodrich Co.	Penang	Akron	6,714				L. Littlejohn & Co., Inc.	Soerabaya	New York	33,120	
Mitsui & Co., Limited..	Singapore	Seattle	862,740				Raw Products Co.	Soerabaya	New York	43,560	
Firestone Tire & Rubber Co.	Hongkong	Akron	171,540				J. T. Johnstone & Co., Inc.	Soerabaya	New York	46,080	
Firestone Tire & Rubber Co.	Penang	Akron	12,294				William H. Stiles & Co.	Soerabaya	New York	11,520	
William H. Stiles & Co.	Far East	New York	132,300				Firestone Tire & Rubber Co.	Batavia	New York	143,100	
J. T. Johnstone & Co., Inc.	Far East	New York	100,800								

*Reported in THE INDIA RUBBER WORLD, June 1, 1919.

*Transshipped from S. S. *Medusa*.

	Shipment from:	Shipped to:	Pounds.	Totals.		Shipment from:	Shipped to:	Pounds.	Totals.
Firestone Tire & Rubber Co.	Soerabaya	Akron	260,280		Peninsular Trading Co.	Singapore	New York	96,480	
Manhattan Rubber Mfg. Co.	Soerabaya	New York	37,440		Jaeger & Co.	Singapore	New York	126,900	
Rubber Trading Co.	Sumatra	New York	93,600		Balfour, Williamson & Co.	Singapore	New York	83,880	
Robinson & Co.	Batavia	New York	130,680		A. C. Fox & Co.	Singapore	New York	67,500	
Robinson & Co.	Soerabaya	New York	18,360		Joosten & Jansen	Singapore	New York	62,820	
Edward Maurer Co., Inc.	Soerabaya	New York	123,860		Rubber Importers & Dealers' Co., Inc.	Singapore	New York	57,340	
Poel & Kelly	Batavia	New York	38,340		Winter, Ross & Co.	Singapore	New York	56,160	
Poel & Kelly	Soerabaya	New York	74,700		T. D. Desmond & Co.	Singapore	New York	54,000	
Winter, Ross & Co.	Batavia	New York	77,400		Pacific Trading Corp. of America	Penang	New York	50,400	
Winter, Ross & Co.	Soerabaya	New York	84,780		Pacific Trading Corp. of America	Singapore	New York	43,560	
E. S. Kuh & Valk Co., Inc.	Batavia	New York	35,640		Vernon Metal & Produce Co., Inc.	Singapore	New York	45,360	
Cata American Co., Inc.	Batavia	New York	38,340		W. R. Grace & Co.	Singapore	New York	40,320	
Java-Holland America Co.	Batavia	New York	7,020		A. G. De Cheribin & Co.	Singapore	New York	40,320	
General Rubber Co.	Batavia	New York	706,320		Edward Boustead & Co.	Penang	New York	36,000	
W. R. Grace & Co.	Batavia	New York	26,460		Robinson & Co.	Singapore	New York	35,640	
Schilthuis & Co.	Batavia	New York	109,080		The United Malaysian Rubber Co., Ltd.	Singapore	New York	33,300	
Gaston, Williams & Wigmore	Batavia	New York	44,100		Meyer & Brown	Singapore	New York	289,000	
Peninsular Trading Co.	Batavia	New York	28,620		Various	Singapore	New York	166,240	
Various	Soerabaya	New York	138,600		Various	Pt. Swet'n'h'm	New York	95,040	7,280,866
Various	Batavia	New York	181,800	2,566,100					
JUNE 2. By the S. S. <i>Carmania</i> , at New York.					JUNE 13. By the S. S. <i>City of Benares</i> , at New York.				
The B. F. Goodrich Co.	Liverpool	New York	68,940		Charles T. Wilson Co., Inc.	Colombo	New York	128,340	
Poel & Kelly	Liverpool	New York	8,820	77,766	William H. Stiles & Co.	Colombo	New York	25,200	
JUNE 2. By the S. S. <i>Lorraine</i> , at New York.					L. Littlejohn & Co., Inc.	Colombo	New York	58,000	
Hyman & Bauman Co.	Havre	New York	180	180	Hood Rubber Co.	Colombo	Watertown	2,700	
JUNE 3. By the S. S. <i>Tenyo Maru</i> , at San Francisco, via Hongkong.					Meyer & Brown	Colombo	New York	33,600	
Aldens' Successors, Limited	San Fran.	San Fran.	33,300		Poel & Kelly	Colombo	New York	216,880	
L. Littlejohn & Co., Inc.	San Fran.	San Fran.	46,800	169,740	Gove & French, Inc.	Colombo	New York	57,420	
Robinson & Co.	San Fran.	San Fran.	89,640		Vernon Metal & Produce Co.	Colombo	New York	26,820	
JUNE 3. By the S. S. <i>Ahita Maru</i> , at New York.					Tharnett & Fahr	Colombo	New York	25,200	
Hood Rubber Co.	Colombo	Watertown	35,640		Frame & Co.	Colombo	New York	18,000	
J. T. Johnstone & Co., Inc.	Colombo	New York	119,160		Various	Colombo	New York	6,780	598,940
Rubber Trading Co.	Colombo	New York	7,200		JUNE 14. By the S. S. <i>Adriatic</i> , at New York.				
Charles T. Wilson Co., Inc.	Colombo	New York	98,100		L. Littlejohn & Co.	London	New York	4,480	4,480
The Goodyear Tire & Rubber Co.	Colombo	New York	46,620		JUNE 18. By the S. S. <i>Bardic</i> , at New York.				
Gove & French, Inc.	Colombo	New York	69,660		L. Littlejohn & Co.	Liverpool	New York	4,620	4,620
L. Littlejohn & Co., Inc.	Colombo	New York	65,880		JUNE 18. By the S. S. <i>Manhattan</i> , at New York.				
Meyer & Brown	Colombo	New York	146,160	822,240	F. R. Henderson & Co.	London	New York	720	
Poel & Kelly	Colombo	New York	233,820		J. T. Johnstone & Co.	London	New York	23,000	113,220
JUNE 4. By the S. S. <i>Invincible</i> , at New York.					Smith & Schipper	London	New York	42,480	
T. D. Downing & Co.	London	New York	24,840	24,840	Rogers-Pyatt Shellac Co.	London	New York	22,680	
JUNE 6. By the S. S. <i>Port Nicholson</i> , at New York.					Various	London	New York	24,340	
The B. F. Goodrich Co.	London	New York	312,300		JUNE 19. By the S. S. <i>Truyama Maru</i> , at New York, via Hongkong.				
Rubber Trading Co.	London	New York	69,480		F. R. Henderson & Co.	Singapore	New York	279,540	
William H. Stiles & Co.	London	New York	68,580		L. Littlejohn & Co.	Singapore	New York	151,610	889,220
F. R. Henderson & Co.	London	New York	47,700		Pacific Trading Corp. of America	Singapore	New York	159,660	
Various	London	New York	148,680	646,740	Charles T. Wilson Co., Inc.	Singapore	New York	32,220	
JUNE 6. By the S. S. <i>Kasama</i> , at New York.					Various	Singapore	New York	163,770	
Balfour, Williamson & Co.	Colombo	New York	1,104,480		Various	Kobe	New York	102,420	
The Goodyear Tire & Rubber Co.	Colombo	New York	296,280	1,400,760	JUNE 19. By the S. S. <i>Royal George</i> , at New York.				
JUNE 7. By the S. S. <i>Mississippi</i> , at New York.					L. Littlejohn & Co., Inc.	London	New York	56,000	
F. R. Henderson & Co.	London	New York	170,280		Various	Liverpool	New York	8,620	64,620
Various	London	New York	102,420	272,700					
JUNE 9. By the S. S. <i>Idaho</i> , at New York.					CENTRALES.				
Hood Rubber Co.	London	Watertown	103,680	103,680	MAY 26. By the S. S. <i>Panama</i> , at New York.				
JUNE 11. By the S. S. <i>Yamagata Maru</i> , at New York.					G. Amsinck & Co., Inc.	Cristobal	New York	15,814	
United States Rubber Co.	Colombo	New York	241,920		Isaac Brandon & Bros.	Cristobal	New York	300	
J. T. Johnstone & Co., Inc.	Colombo	New York	62,280		Various	Cristobal	New York	1,500	17,614
F. R. Henderson & Co.	Colombo	New York	18,720		MAY 26. By the S. S. <i>Bacchus</i> , at New York.				
Rubber Trading Co.	Colombo	New York	16,740		American Trading Co.	Mexico	New York	94,900	94,900
Gove & French, Inc.	Colombo	New York	434,160		MAY 29. By the S. S. <i>Lakehurst</i> , at New York.				
Poel & Kelly	Colombo	New York	142,800		Pablo Calvet & Co.	Cristobal	New York	9,400	
Rubber Importers & Dealers' Co., Inc.	Colombo	New York	131,760		G. Amsinck & Co., Inc.	Cristobal	New York	2,100	
Edward Maurer Co., Inc.	Colombo	New York	124,380		Demarest Bros.	Cristobal	New York	300	11,800
L. Littlejohn & Co., Inc.	Colombo	New York	96,820		JUNE 2. By the S. S. <i>Alliance</i> , at New York.				
Winter, Ross & Co.	Colombo	New York	55,800		Isaac Brandon & Co.	Cristobal	New York	400	
A. C. Fox & Co.	Colombo	New York	54,360		J. S. Sembrada & Co.	Cristobal	New York	500	
Fred Stern & Co.	Colombo	New York	44,280	1,424,020	G. Amsinck & Co., Inc.	Cristobal	New York	6,500	
JUNE 12. By the S. S. <i>Lapland</i> , at New York.					Heilbron, Wolff & Co.	Cristobal	New York	1,500	
L. Littlejohn & Co., Inc.	Liverpool	New York	15,840		W. R. Grace & Co.	Cristobal	New York	500	
Various	Liverpool	New York	21,060		Pablo Calvet & Co.	Cristobal	New York	109,400	118,800
JUNE 13. By the S. S. <i>Eurymedon</i> , at New York.					JUNE 9. By the S. S. <i>Monterey</i> , at New York.				
Charles T. Wilson Co., Inc.	Singapore	New York	301,500		G. Amsinck & Co., Inc.	Havana	New York	40,500	40,500
The B. F. Goodrich Co.	Singapore	New York	75,800		JUNE 11. By the S. S. <i>Lake Wilson</i> , at New York.				
The B. F. Goodrich Co.	Malacca	New York	14,292		Gaston, Williams & Wigmore	Cristobal	New York	8,900	
Rubber Trading Co.	Singapore	New York	56,000		W. R. Grace & Co.	Cristobal	New York	7,200	
W. G. Ryckman Co., Inc.	Singapore	New York	43,560		Mecke & Co.	Cristobal	New York	3,200	
J. T. Johnstone & Co., Inc.	Singapore	New York	45,000		Alejandro Angel & Co.	Cristobal	New York	3,000	
Aldens' Successors, Ltd.	Singapore	New York	2,826		J. S. Sembrada & Co.	Cristobal	New York	2,400	
Aldens' Successors, Ltd.	Penang	New York	225,540		Pablo Calvet & Co.	Cristobal	New York	1,100	25,800
F. R. Henderson & Co.	Singapore	New York	156,960		JUNE 12. By the S. S. <i>General H. F. Hodges</i> , at New York.				
F. R. Henderson & Co.	Penang	New York	35,280		G. Amsinck & Co., Inc.	Cristobal	New York	14,500	
Hood Rubber Co.	Penang	Watertown	2,700		Isaac Brandon & Bros.	Cristobal	New York	400	14,900
L. Littlejohn & Co., Inc.	Singapore	New York	2,016,000		JUNE 13. By the S. S. <i>Advance</i> , at New York.				
General Rubber Co.	Singapore	New York	812,560		G. Amsinck & Co., Inc.	Cristobal	New York	12,700	
Poel & Kelly	Singapore	New York	711,368		Lazard Freres	Cristobal	New York	4,000	
The Goodyear Tire & Rubber Co.	Singapore	Akron	447,660		Vulcan Trading Co.	Cristobal	New York	2,300	
Fred. Stern & Co.	Singapore	New York	260,640		Neuss, Hesslein Co.	Cristobal	New York	3,700	
Curry, McPhillips & Co.	Singapore	New York	201,600		Mecke & Co.	Cristobal	New York	3,500	
American Export Co.	Deli	New York	150,120		Chas. E. Griffin	Cristobal	New York	1,400	
Hadden Co.	Singapore	New York	140,400		Various	Cristobal	New York	100	27,700
Edward Maurer Co., Inc.	Singapore	New York	100,800		JUNE 18. By the S. S. <i>Lake Markham</i> , at New York.				
					Rubber Ass'n of America	Cartagena	New York	3,700	3,700

JULY 1, 1919.]

THE INDIA RUBBER WORLD

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Totals

AFRICANS.

Shipment from:	Shipped to:	Pounds.	Totals.
JUNE 9. By the S. S. <i>Lieutenant Sam. Mengel</i> , at New York.	Rubber Ass'n of America	Seconded New York	6,555

PONTIANAK.

APRIL 29. By the S. S. <i>Protesilaus</i> , at Seattle.	L. Littlejohn & Co., Inc.	Liverpool	26,700
APRIL 30. By the S. S. <i>Mexico Maru</i> , at Seattle.	L. Littlejohn & Co., Inc.	Singapore	70,500
MAY 14. By the S. S. <i>Tancred</i> , at San Francisco.	L. Littlejohn & Co., Inc.	Singapore	42,900
Hadden & Co.	Singapore	New York	88,800
MAY 20. By the S. S. <i>Tyndareus</i> , at Seattle, via Hongkong.	L. Littlejohn & Co., Inc.	Singapore	110,100
MAY 21. By the S. S. <i>Senator</i> , at Seattle, via Manila.	Hadden & Co.	Singapore	119,100
MAY 25. By the S. S. <i>Buyo Maru</i> .	United Malaysian Rubber Co., Ltd.	Singapore	288,960
L. Littlejohn & Co., Inc.	Singapore	San Fran.	60,300

JUNE 2. By the S. S. <i>Djember</i> , at New York.				
United Malaysian Rubber Co.	Soerbaya	New York	67,200	
L. Littlejohn & Co., Inc.	Soerbaya	New York	601,200	
E. S. Kuh & Valk Co., Inc.	Soerbaya	New York	19,800	688,200

JUNE 13. By the S. S. <i>Enrymedon</i> , at New York.				
F. R. Henderson & Co.	Singapore	New York	134,400	
Rubber Trading Co.	Singapore	New York	88,500	
L. Littlejohn & Co., Inc.	Singapore	New York	761,600	
Federal Products Corp.	Singapore	New York	156,000	
Desmond & Co.	Singapore	New York	134,100	
Jaeger & Co.	Singapore	New York	635,400	
Fred. Stern & Co.	Singapore	New York	95,100	
Gaston, Williams & Wigmore	Singapore	New York	72,600	
Hadden & Co.	Singapore	New York	60,000	
Edward Boustead & Co.	Singapore	New York	56,700	
E. S. Kuh & Valk Co.	Singapore	New York	28,800	
Various	Singapore	New York	246,000	2,469,200

BALATA.

MAY 26. By the S. S. <i>Panama</i> , at New York.				
Pacific Metal Co.....	Cristobal	New York	6,000	
De Lima, Correa & Carrisoso, Inc.	Cristobal	New York	1,350	7,350
MAY 29. By the S. S. <i>Lakehurst</i> , at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	9,000	9,000

G. Amsinck & Co., Inc.	Cristobal	New York	9,000	9,000
JUNE 2. By the S. S. <i>Alhambra</i> , at New York.				
G. Amsinck & Co., Inc.	Cristobal	New York	6,900	15,300
J. S. Sembrada & Co.	Cristobal	New York	5,250	
W. R. Grace & Co.	Cristobal	New York	1,650	
De Lima, Correa & Carrisoso	Cristobal	New York	1,200	
Heilbron, Wolff & Co.	Cristobal	New York	300	

JUNE 6. By the S. S. <i>Maravul</i> , at		New York.	
Rubber Ass'n of America	Trinidad	New York	450
Yglesias & Co., Inc.....	Trinidad	New York	864
Various	Trinidad	New York	3,300
			4,614

JUNE 12. By the S. S. <i>General H. F. Hodges</i> , at New York.	G. Amsinck & Co., Inc.	Cristobal	New York	4,050
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JUNE 12. By the S. S. <i>Lapland</i> , at New York.	R. & J. Dick	Liverpool	New York	7,950
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JUNE 16. By the S. S. <i>Matura</i> , at New York.				
J. Peregrine Watson....	Trinidad	New York	450	
Various	Trinidad	New York	6,426	6,876

JUNE 18. By the S. S. <i>Bardic</i> , at New York.	R. & J. Dick, Ltd.	Liverpool	New York	1,536
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GUTTA PERCHA.

JUNE 2. By the S. S. <i>Djember</i> , at New York.	United Malaysian Rubber Co.	Sourabaya	New York	54,000
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JUNE 3. By the S. S. <i>Canada</i> , at New York.	Smith & Schipper	Marseilles	New York	66,000
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JUNE 4. By the S. S. <i>Invincible</i> , at New York.	Earle Bros.	London	New York	17,700
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GUTTA SIAX.

MAY 14. By the S. S. <i>Tancred</i> , at San Francisco.	United Malaysian Rubber Co.	Singapore	New York	243,000
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MAY 23. By the S. S. <i>Ision</i> , at New York.	T. A. Desmond & Co.	London	New York	327,000
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JUNE 4. By the S. S. <i>Invincible</i> , at New York.	Fred Stern & Co.	London	New York	12,600
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JUNE 12. By the S. S. <i>Lapland</i> , at New York.	Earle Bros.	Liverpool	New York	25,800
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GUTTA.

JUNE 2. By the S. S. <i>Djember</i> , at New York.	Kidder, Peabody & Co.	Soerabaya	New York	163,200
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United Malaysian Rubber Co.	Soerabaya	New York	30,000
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JUNE 4. By the S. S. <i>Invincible</i> , at New York.				
Earle Bros.	London	New York	25,800	
T. A. Desmond	London	New York	24,000	49,800

JUNE 18. By the S. S. <i>Bardic</i> , at New York.	Earle Bros.	Liverpool	New York	3,900
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OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:				
India rubber:				
From Portugal	2,600	\$720		
United Kingdom	79,828	\$30,568	5,635,298	2,732,804
Canada	179,965	106,437	647,043	286,906
Central America	42,584	14,257	24,669	9,746
Mexico	98,086	36,070	40,274	11,925
Brazil	4,284,554	1,334,825	3,296,587	960,330
Peru	3,933	1,917	199,859	81,068
Other South America	92,356	42,377	345,014	131,698
British East Indies	25,715,149	12,928,351	40,637,290	15,820,145
Dutch East Indies	2,481,727	1,321,758	10,178,932	3,819,947
Other countries	35,598	19,410	758,264	285,821
Totals	33,013,780	\$15,835,990	61,765,830	\$24,141,110
Baiaeta	304,674	180,057	132,321	63,493
Guayule			521,243	108,943
Jelutong	624,018	43,430	1,411,499	118,156
Gutta percha			610,206	101,408
Totals	928,692	\$223,487	2,675,269	\$392,000
Rubber scrap	305,320	23,204	848,052	67,724
Totals, unmanufactured	34,247,792	\$16,082,681	65,289,151	\$24,600,234
Chicle (dutiable)	984,958	488,651	743,951	497,984
MANUFACTURED—dutiable:				
India rubber and gutta percha		\$99,895		\$113,552
India rubber substitutes		16,507	283	44

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—				
Automobile tires ¹	\$1,108,783		\$3,923,936	
All other tires ¹	88,313		137,742	
Scrap and old	86,298	10,830	588,758	78,976
Reclaimed rubber	273,687	44,506	311,361	52,379
Belting, hose, and packing ¹	378,312		533,769	
Rubber boots ¹	29,322	86,094	17,378	52,820
Rubber shoes ¹	131,487	119,721	293,936	223,996
Druggists' rubber sundries ¹		65,469		116,524
Insulated wire and cables ¹		38,959		153,342
Other rubber manufactures ¹		593,833		941,292
Totals, manufactured	\$2,493,861		\$6,061,434	
Fountain pens	14,945	10,607	33,905	43,525

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—				
India rubber	953,885	\$479,457	433,206	\$199,409
Balata	97,982	60,010	64,960	37,874
Gutta percha	118,254	26,443		
Totals, unmanufactured	1,170,121	\$565,910	498,166	\$237,283
MANUFACTURED—				
India rubber		4,772		
Gutta percha				621
Rubber substitutes, elasticon, etc.				
Totals, manufactured		4,772		621
Chicle	982	746		

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—				
To Alaska:				
Belting, hose, and packing		\$34,616		\$23,579
Boots and shoes	9,109	35,355	11,477	31,630
Other rubber goods		4,346		3,880
Totals	9,109	\$74,317	11,477	\$59,089
To Hawaii:				
Belting, hose, and packing		\$8,407		\$4,952
Automobile tires		152,574		91,927
Other tires		8,144		1,558
Other rubber goods		21,258		13,352
Totals		\$190,383		\$111,789
To Philippine Islands:				
Belting, hose, and packing		\$15,117		\$38,794
Boots and shoes	20,258	12,099	25,227	18,277
Tires		173,871		66,767
Other goods		30,351		66,374
Totals	20,258	\$231,438	25,227	\$190,212
To Porto Rico:				
Belting, hose, and packing		6,988		6,187
Automobile tires		44,443		74,871
Other tires		473		3,412
Other rubber goods		8,120		6,043
Totals		\$60,024		\$90,513

¹ Details of exports of domestic merchandise by countries during April, 1919, are given on page 602 of this issue.

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF APRIL, 1919.

EXPORTED TO—	Belting, Hose and Packing. Value.	Boots.		Shoes.		Druggists' Rubber Sundries. Value.	Tires.		Insulated Wire and Cables. Value.	All Other Rubber Manu- factures. Value.	Totals Value.
		Pairs.	Value.	Pairs.	Value.		Auto- mobile. Value.	All Others. Value.			
EUROPE:											
Azores and Madeira Islands...									\$58	\$28	\$86
Belgium	\$1,419			4	\$4		\$5,405	\$13,634	2,355	1,970	24,787
Denmark	5,230	300	\$251	35,650	24,756	\$740	33,746	16,523	25,392	29,357	135,995
Finland									299		299
France	25,245					6,848	1,968,453	18,105	26,928	264,525	2,310,104
Gibraltar								90			90
Greece							3,945			280	4,225
Iceland and Faroe Islands.....						118				4	122
Italy	375						242				617
Netherlands	1,654						19,120	5,369	76,043	30,515	132,701
Norway	542			34,322	27,804	114	30,445	20,510	155,327	5,574	240,316
Portugal	107			2,142	2,184	486	3,217	1,069	34,760	552	42,375
Serbia, Montenegro, etc.							100				100
Spain	4,243					1,695	47,392		1,170	10,843	65,429
Sweden	12,087			6	10		130,942	120		7,495	150,654
England	47,714			92,080	53,434	18,353	129,623	1,077	11,193	134,095	395,489
Scotland	505									1,976	2,481
TOTALS, EUROPE	\$99,121	300	\$251	164,204	\$108,192	\$28,354	\$2,372,630	\$76,583	\$333,525	\$487,214	\$5,505,870
NORTH AMERICA:											
Bermuda	\$141	48	\$172	150	\$109	\$90	\$12		\$274	\$85	\$883
British Honduras	442			1,167	1,278	192	156		58	62	2,195
Canada	44,058	3,303	10,944	22,264	23,730	25,437	104,658	2,870	9,059	196,937	417,693
Costa Rica						10	503				513
Guatemala	691	1	5	457	547	730	3,194	155	1,613	1,633	8,568
Honduras	1,712	6	20	640	611	323	7,119	10	615	495	10,905
Nicaragua	948					235	1,415	51	274	866	3,789
Panama	3,110	66	223	3,744	4,928	954	16,896	1,008	8,001	2,997	38,117
Salvador	1,762					5	18,626	1,492	189	7,518	29,592
Mexico	58,998	64	246	3,206	3,174	10,718	75,732	5,716	38,165	24,734	217,483
Miquelon, Langley, etc.		1,032	2,936							410	3,346
Newfoundland and Labrador...	799	6,288	17,710	19,409	21,201	528	6,352	298	2,916	1,557	51,361
Barbados	182	12	32			187	4,003		365	50	4,819
Jamaica	506			2	2	200	9,271	168	662	733	11,542
Trinidad and Tobago.....	1,870			1,197	641	388	10,823	235	40,571	1,405	55,933
Other British West Indies....	59					278	7,413	409	61	268	8,488
Cuba	31,229	72	166	31,941	23,084	5,828	298,343	2,147	54,052	16,534	431,383
Danish West Indies.....	70			9	10		401	97		1,320	1,898
Dutch West Indies.....	1,084					6	1,652		1,060	37	3,839
French West Indies.....	983			1,077	839		25,353		479	425	28,079
Haiti	40			3	3	108	2,021	69	90	1,346	3,677
Dominican Republic	1,411			6	12	284	19,091	687	593	2,189	24,267
TOTALS, NORTH AMERICA.	\$150,095	10,892	\$32,454	85,272	\$80,169	\$46,501	\$613,034	\$15,419	\$159,097	\$261,601	\$1,358,370
SOUTH AMERICA:											
Argentina	\$10,094					\$3,525	\$35,207	\$17,068	\$6,048	\$952	\$72,894
Bolivia	600					278	448		4,491	28	5,845
Brazil	27,976	72	\$394	1,841	\$1,546	3,595	82,187	130	87,262	9,709	212,799
Chile	99,213	1,212	4,350	3,918	3,240	5,141	149,476	593	52,080	19,906	333,999
Colombia	624	36	98	2,232	2,139	180	6,939	799	1,316	1,886	13,981
Ecuador	1,159			444	331	267	26,996		1,672	548	30,973
British Guiana	1,181			250	273	306	2,601		1,322	571	6,254
Dutch Guiana	3					37	390			188	618
Peru	12,697	833	4,950			899	25,549	25	8,667	3,527	56,314
Uruguay	4,013			5,128	4,969	1,006	62,373	142	10,600	4,994	88,097
Venezuela	1,934					597	29,510	35	3,836	1,082	36,994
TOTALS, SOUTH AMERICA.	\$159,494	2,153	\$9,792	13,813	\$12,498	\$15,831	\$421,676	\$18,792	\$177,294	\$43,391	\$858,768
ASIA:											
China	\$331	1	\$5	74	\$61	\$1,105	\$42,141		\$38,093	\$6,947	\$88,683
Chosen	53			60	58	92	1,767			388	2,358
British India	17,045					3,638	101,788	3,442	23,740	17,253	166,906
Straits Settlements							63,161		6,645	3,964	73,770
Other British East Indies....							4,268		97	201	4,566
Dutch East Indies.....	10,666					873	58,339	13,147	8,769	13,476	105,270
French East Indies.....							1,766		950	8	2,724
Hongkong						132	5,696		25	649	6,502
Japan	31,448	153	490	3,413	3,001	9,317	20,851	96	653	16,208	82,064
Russia in Asia.....	100	200	1,226	456	390					1,414	3,130
Siam						112	9,766			1,553	11,431
Turkey in Asia.....	860						36				896
TOTALS, ASIA	\$60,503	356	\$1,721	4,003	\$3,510	\$15,269	\$309,579	\$16,685	\$78,972	\$62,061	\$548,300
OCEANIA:											
Australia	\$11,007	62	\$388	360	\$195	\$3,545	\$66,194	\$1,276	\$5,406	\$14,102	\$102,113
New Zealand	3,008	3,129	6,308	395	418	2,675	59,584	828	5,960	7,847	86,628
Other British Oceania.....	20			106	158		4,495	24		274	4,971
French Oceania	144			48	42		248	35	16	284	769
German Oceania	14	2	12				464			111	601
Philippine Islands	38,794			25,227	18,277	4,174	58,667	8,100	6,764	62,200	196,976
TOTALS, OCEANIA	\$52,987	3,193	\$6,708	26,136	\$19,090	\$10,394	\$189,652	\$10,263	\$18,146	\$84,818	\$392,058
AFRICA:											
British West Africa.....	\$8,751						\$4,971		\$54	\$40	\$13,816
British South Africa.....	2,169	300	\$1,071	476	\$436					2,086	5,762
British East Africa.....							7,188				7,188
Canary Islands							220				220
French Africa							285				285
Portuguese Africa	371	184	823	32	101	\$175					1,470
Egypt	278						4,701			81	5,060
TOTALS, AFRICA	\$11,569	484	\$1,894	508	\$537	\$175	\$17,365		\$54	\$2,207	\$33,801

(Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.)

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	March.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:				
Rubber, gutta percha, etc.:				
From United Kingdom	75,245	\$26,113	86,368	\$29,012
United States	958,413	468,403	414,988	182,047
Straits Settlements	403,200	221,441	734,656	274,928
Other countries	68,886	43,831	333,079	146,697
Totals	1,505,744	\$759,488	1,569,091	\$632,684
Rubber, recovered	532,711	\$86,642	314,801	\$50,538
Hard rubber sheets and rods	2,795	2,151	4,048	3,185
Rubber, powdered, and rubber or gutta percha scrap	219,220	15,519	233,922	25,941
Rubber thread, not covered	4,398	6,486	5,347	3,511
Rubber substitute	72,686	10,036	166,057	19,921
Totals	831,810	\$120,834	724,175	\$103,096
Chicle	214,825	\$97,956	279,666	\$229,372
MANUFACTURED—dutiable:				
Boots and shoes		\$7,734		\$24,850
Belting, hose and packing		36,481		30,043
Waterproofed clothing		25,338		20,065
Tires		213,618		166,345
Other manufactures		122,006		196,705
Totals		\$405,177		\$332,623

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	March.			
	1918.		1919.	
	Produce of Canada.	Reexports of Foreign Goods.	Produce of Canada.	Reexports of Foreign Goods.
	Value.	Value.	Value.	Value.
MANUFACTURED—				
Hose	\$29,956		\$37,165	
Boots and shoes	44,840		626,454	
Clothing	263		944	
Tires	41,557	\$1,605	606,944	\$2,097
Waste	3,189		8,739	
Belting			9,391	
All other—n. o. p.	11,570	840	60,512	1,311,662
Totals	\$131,375	\$2,445	\$1,350,149	\$1,313,759
Chicle	\$227,899		\$108,679	

UNITED KINGDOM RUBBER STATISTICS.

	April.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
From:				
Dutch East Indies	4,928,400	£589,828	3,293,500	£363,536
French West Africa	218	1,288		
Gold Coast	211	2,228	434	4,790
Other African countries	400	6,548	3,291	32,585
Peru			120	840
Brazil	188	1,327	37,065	400,880
British India	2,567	30,821	16,333	175,604
Straits Settlements and dependencies, including Labuan	21,474	251,455	95,554	1,022,840
Federated Malay States	19,189	230,132	112,052	1,188,080
Ceylon dependencies	20,315	240,584	40,254	437,376
Other countries	2,201	25,469	2,863	31,820
Totals	116,047	£1,379,690	346,901	£3,658,351
Waste and reclaimed rubber	33	93	3,806	11,295
Totals	116,080	£1,379,783	344,707	£3,669,646
Gutta percha	587,552	84,185	607,712	83,172
MANUFACTURED—				
Boots and shoes, dozen pairs	750	£8,129	28,773	£40,647
Waterproofed clothing		9,006		1,062
Automobile tires and tubes		51,190		268,876
Motorcycle tires and tubes		4,923		1,195
Carriage tires and tubes		82		
Bicycle tires and tubes		9,489		
Insulated wire				
Totals	750	£82,819	28,773	£40,647
UNMANUFACTURED—				
Waste and reclaimed rubber	269,400	£5,982	420,600	£12,132
MANUFACTURED—				
Waterproofed clothing		38,290		84,816
Boots and shoes, dozen pairs	4,114	5,054	9,651	17,499
Insulated wire		5,975		37,716
Submarine cables		23,714		87,084
Carriage tires and tubes		15,298		25,315
Automobile tires and tubes	481	200,719	59	33,719
Motorcycle tires and tubes		14,827		11,622
Bicycle tires and tubes		20,086		130,958
Other rubber manufactures		106,868		204,533
Totals	4,595	£430,831	9,710	£633,262

EXPORTS—COLONIAL AND FOREIGN.

	April.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
To Belgium	21,976	£267,244	11,613	£81,709
France	3,113	40,824	23,877	267,769
Italy	2,367	15,755	7,530	86,225
United States	665	8,853	20,577	193,263
Other countries			7,825	104,673
Totals	27,921	£332,676	71,422	£733,639
Waste and reclaimed rubber				
Totals	27,921	£332,676	71,422	£733,639
Gutta percha	4,480	896	163,520	6,419
MANUFACTURED—				
Boots and shoes, dozen pairs	9	£86	13	£73
Waterproofed clothing		4		397
Automobile tires and tubes		5,923		1,243
Motorcycle tires and tubes		26		13,872
Bicycle tires and tubes		669		333
Carriage tires and tubes		647		198
Totals	9	£7,355	13	£16,261

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Twelve Months Ended December 31.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—raw and reclaimed:				
From Great Britain	11,213		7,155	
India and Ceylon	18,356		7,980	
Straits Settlements	6,806		31,130	
French African Colonies	2,320		6,601	
Belgian Congo	1,221		251	
Brazil	19,881		19,925	
Other countries	1,475		2,413	
Totals	61,275	67,399,200	75,455	83,000,500
Rubber scrap	9,313	1,117,560	2,945	353,400
MANUFACTURED—				
India rubber and gutta percha—				
Threads	399	877,800	671	1,476,200
Sheets:				
Cut sheets	17	37,400	3	6,600
Elastic fabric	32	22,400		
Other kinds, including hard rubber	226	271,200	340	408,000
Tubes:				
From cut sheets	1	2,200	4	8,800
Elastic fabric	65	58,500	106	95,400
Other forms	7	7,700	2	2,200
Belting	462	508,200	607	667,700
Rubber-coated fabrics—pieces:				
For carding combs	429	557,700	332	431,600
Other forms	166	249,000	61	91,500
Boots and shoes—pairs:				
From France	11,019		27,651	
United States	31,666	515,160	4,233	389,316
Other countries	245		559	
Elastic webbing	297	594,000	332	664,000
Clothing and articles for travel	10	30,000	17	51,000
Manufactures n. e. a.:				
From cut sheets	54	140,400	35	91,000
Elastic fabric	1,664	1,396,800	1,554	1,864,800
Tires and tubes:				
From France	4,056		2,554	
Great Britain	1,944	11,037,600	468	5,445,000
Other countries	132		3	
Other rubber manufactures:				
From France	873		2,113	
Great Britain	1,881		3,966	
United States	2,221	5,974,800	230	7,574,400
Other countries	4		3	
Totals, manufactured		22,280,860		19,258,516
Total imports		90,797,620		102,621,416

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Twelve Months Ended December 31.

	1917.		1918.	
	Quintals. ¹	Lire. ²	Quintals.	Lire.
UNMANUFACTURED—				
India rubber and gutta percha—raw and reclaimed:				
To Spain	1,549		1,778	
United States	2,889		1,134	
Totals	4,438	1,553,300	2,912	1,019,200
MANUFACTURED—				
India rubber and gutta percha—				
Threads	218	479,600	82	180,400
Sheets:				
Cut sheets	6	12,000	21	42,000
Elastic fabric	31	24,800	26	20,800
Insulated wire	2	1,000	3	1,500
Other kinds, including hard rubber	83	83,000	42	42,000
Tubes:				
From cut sheets	7	15,400	19	41,800
Elastic fabric	314	251,200	221	176,800
Other forms	307	291,650	161	152,950
Belting	12	12,000	87	87,000
Rubber-coated fabrics—pieces	221	265,200	55	66,000
Elastic webbing	2,036	3,868,400	1,205	2,289,500
Clothing and articles for travel	39	109,200	10	28,000

	Twelve Months Ended December 31.			
	1917.		1918.	
	Quintals. ¹	Lire ²	Quintals.	Lire.
Manufactures of india rubber and gutta percha—n. e. s.:				
From cut sheets	96	211,200	77	169,400
Elastic fabric	177	194,700	131	144,100
Tires and tubes:				
To France	3,244		2,945	
Great Britain	7,554		2,001	
Spain	128		84	
Switzerland	15		2	
India and Ceylon	2,271		579	
Dutch East Indies	350	25,022,400	774	10,830,300
Straits Settlements	1,929		235	
Australia	144		158	
Brazil	1,120		529	
Argentina	1,411		221	
Other countries	1,032		801	
Other rubber manufactures:				
To France	211		301	
Great Britain	168		128	
Spain	34		12	
Switzerland	246		161	
Egypt	17	1,501,000	36	1,031,000
Argentina	414		140	
Brazil	165		80	
Uruguay	84		9	
Other countries	162		164	
Totals, manufactured		2,342,750		4,556,550
Total exports		33,896,050		16,322,750

¹ A quintal = 220.46 pounds.² A lira = \$0.193.

THE MARKET FOR SCRAP RUBBER. NEW YORK.

THERE HAS BEEN NO IMPROVEMENT in the scrap rubber market over the generally poor condition that has characterized it for the past few months. The most important factor in maintaining this condition is the weakness in crude rubber and the large spot supplies of it available in New York. Scrap dealers and reclaimers are considering the possibilities for export trade to Europe.

Prices on all grades of scrap rubber are nominal and stock movements are at a minimum. The business is confined practically to dealings in mixed auto tires, repairables and automobile fabric.

The following quotations are nominal.

QUOTATIONS FOR CARLOAD LOTS DELIVERED.

JUNE 25, 1919.

Prices subject to change without notice.

BOOTS AND SHOES:			
Arctic tops	lb.	.01 1/4 @	.01 1/4
Boots and shoes	lb.	.07 1/4 @	.08
Trimmed arctic	lb.	.06 1/4 @	.06 1/4
Untrimmed arctic	lb.	.05 1/4 @	.05 1/4
HARD RUBBER:			
Battery jars, black compound	lb.	.01 @	
No. 1, bright fracture	lb.	.24 @	.25
INNER TUBES:			
No. 1, old packing	lb.	.20 @	.21
new packing	lb.	.24 @	.25
No. 2	lb.	.10 1/2 @	.10 1/2
Red	lb.	.10 1/2 @	.10 1/2
MECHANICALS:			
Black scrap, mixed, No. 1	lb.	.04 1/4 @	.04 1/4
No. 2	lb.	.03 1/4 @	.03 1/4
Car springs	lb.	.04 1/4 @	.04 1/4
Heels	lb.	.03 1/4 @	.03 1/4
Horse-shoe pads	lb.	.03 1/4 @	.04
Hose, air-brake	lb.	.04 1/2 @	.04 1/2
fire, cotton lined	lb.	.01 1/4 @	.02
garden	lb.	.01 1/4 @	.01 1/4
Insulated wire stripping, free from fiber	lb.	.03 1/4 @	.04
Matting	lb.	.03 1/4 @	.04
Packing	lb.	.01 1/4 @	
Red scrap, No. 1	lb.	.09 1/4 @	.10
No. 2	lb.	.06 1/4 @	.07
White scrap, No. 1	lb.	.09 1/4 @	.09 1/4
No. 2	lb.		
TIRES, PNEUMATIC:			
PNEUMATIC:			
Auto peelings, No. 1	lb.	.09 1/4 @	.10 1/4
No. 2	lb.	.06 @	.06 1/4
Bicycle	lb.	.04 1/4 @	.04 1/4
Standard white auto	lb.	.05 1/4 @	.05 1/4
Standard mixed auto	lb.	.03 1/4 @	.04
Stripped, unguaranteed	lb.	.03 1/4 @	.03 1/4
White, G. & G., M. & W., and U. S.	lb.	.05 1/4 @	.05 1/4
SOLID:			
Carriage	lb.	.04 1/4 @	.04 1/4
Irony	lb.	.01 1/4 @	.01 1/4
Truck	lb.	.04 1/4 @	.04 1/4

THE MARKET FOR COTTON AND OTHER FABRICS. NEW YORK.

UNFAVORABLE WEATHER, reduced acreage and scarcity of labor are responsible for the strong position of the market for American cotton during the past month. According to the general outlook, only a moderate crop is expected. On June 2, middling uplands, spot, was 32.80 cents, and with the exception of a decline early in the month, the market has advanced and June 23 the quotation was 33.50 cents.

The following report concerning the Egyptian, Arizona and Sea Island cotton situation is furnished by John Malloch & Co.:

EGYPTIAN COTTON. Prices have not changed, the selling being still controlled by the commission. This condition, however, will probably change after July 31, as the Cotton Control Commission will cease to buy cotton after that date. There is a very large stock of Egyptian cottons of all kinds in Alexandria, but thus far no plan has been announced for disposing of this accumulation, which is owned by the commission. The future contract market in Alexandria is still closed, although the Liverpool Egyptian future market reopened on June 2. The general tendency is for firmness in fall deliveries, figures being quoted a cent or two above present fixed prices. The growing crop in Egypt is doing well thus far, but a water scarcity is feared later on, which may affect the quality of the cotton rather than the quantity. Acreage estimates are not yet available, but it is understood that there is considerable increase over last season.

AMERICAN EGYPTIAN COTTON. Conditions in Arizona have been favorable to the growing crop, and it is expected that from 45,000 to 50,000 bales will be grown in the Salt River valley during the present season. Last year's crop is practically sold, but small quantities of desirable cotton are still available at around 53 to 55 cents for prompt delivery. New crop prices are not available at this time.

SEA ISLAND COTTON. The better grades of Sea Island cotton are becoming very scarce and hard to buy, most holders desiring to sell round lots which contain a fair quantity of low grades. A first cost price of 60 cents is being asked in the South. There have been sales of average extra choice recently at 61 cents, but it would take at least 63 cents to move any appreciable quantity. This marks a rise of fully 10 cents per pound since early May.

Various estimates of the growing crop in Georgia and Florida agree that there has been a tremendous reduction in acreage, and the average guess places the probable number of bales which will ultimately be ginned next fall at around 25,000, as compared with a normal crop of 90,000 to 120,000 bales a short time ago.

DUCKS AND DRILLS. The market has been exceedingly strong and all cloths of standard construction are scarce. Prices have all advanced.

RAINCOAT FABRICS. Stocks appear to be all sold for several months ahead. Prices are advancing in the face of a steady demand for all grades.

TIRE FABRICS. The steady call for tire fabrics of all grades has continued through the month with a noticeable scarcity of standard grades. The price undertone is firm and quotations are a little lower than last month.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Prices subject to change without notice.

ASBESTOS CLOTH:

Brake lining, 2 1/4 lbs. sq. yd., brass or copper insertion	lb.	.85 @
2 1/4 lbs. sq. yd., brass or copper insertion	lb.	.90 @

MURLAPS:

32-7-ounce	100 yards	9.25 @
32-8-ounce		10.25 @
40-7 1/2-ounce		11.65 @
40-8-ounce		11.75 @
40-10-ounce		12.75 @
40-10 1/2-ounce		13.00 @

45—7½-ounce.....	100 yards	12.75 @
45—8-ounce.....		13.00 @
45—9½-ounce.....		15.00 @
48—10-ounce.....		15.25 @
DRILLS:		
38-inch 2.00-yard.....	yard	.32½ @
40-inch 2.47-yard.....		.26½ @
52-inch 1.90-yard.....		.36½ @
52-inch 1.95-yard.....		.35½ @
60-inch 1.52-yard.....		.47½ @
DUCK:		
CARRIAGE CLOTH:		
38-inch 2.00-yard enameling duck.....	yard	.33 @
38-inch 1.74-yard.....		.37½ @
72-inch 16.66-ounce.....		.73 @
72-inch 17.21-ounce.....		.75½ @
MECHANICAL:		
Hose.....	pound	.60 @
Belting.....		.63 @
HOLLANDS, 40-INCH:		
Acme.....	yard	.23 @
Endurance.....	yard	.27½ @
Penn.....	yard	.30 @
OSWABURGH:		
40-inch 2.35-yard.....	yard	.26½ @
40-inch 2.48-yard.....		.25½ @
37½-inch 2.42-yard.....		.26 @
RAINCOAT FABRICS:		
COTTON:		
Bombazine 64 x 60 water-repellent.....	yard	.20 @
60 x 48 not water-repellent.....		.18 @

Cashmeres, cotton and wool, 36-inch, tan.....	yard	.77½ @
cotton, blue and black.....		.85 @
Oxford.....		.75 @
Twills 64 x 72.....		.30 @ .32½
64 x 102.....		.35 @ .40
Twill, mercerized, 36-inch, tan and olive.....		.35 @
blue and black.....		.36 @
navy.....		.37½ @
Tweed.....		.50 @ .67½
printed.....		.16 @ .22
Plaids 60 x 48.....		.18½ @
56 x 44.....		.17½ @
Repp.....		.38½ @ .45
Surface prints 60 x 48.....		.19½ @
64 x 60.....		.21 @

IMPORTED WOOLEN FABRICS SPECIALLY PREPARED FOR RUBBERIZING**—PLAIN AND FANCIES:**

63-inch, 3¼ to 7½ ounces.....	yard	1.30 @ 3.50
36-inch, 2¼ to 5 ounces.....		.75 @ 1.90

IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces.....	yard	.90 @ 1.85
36-inch, 2 to 4 ounces.....		.55 @ 1.10

DOMESTIC WORSTED FABRICS:

36-inch, 4¼ to 8 ounces.....	yard	.60 @ 1.25
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DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces.....	yard	.19 @ .30
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SHEETINGS:**JACKET:**

Delaware.....	yard	.23 @
Schuylkill.....	yard	.25 @

BIKES:

Canton, 38-inch.....	yard	.38½ @
Schappe, 36-inch.....		.63 @

TIRE FABRICS:

17¼-ounce Sea Island, combed.....	pound	1.40 @
17¼-ounce Egyptian, combed.....		1.20 @
17¼-ounce Egyptian, carded.....		1.12 @
17¼-ounce Peelers, combed.....		1.10 @
17¼-ounce Peelers, carded.....		.84 @

*Nominal.

SEA ISLAND CROP MOVEMENT.

FROM AUGUST 1, 1918, TO MAY 30, 1919.

	Receipts.	
	1918-19.	1917-18.
Stock on hand, August 1, 1918—		
Savannah, 15247; Charleston, 517.....	bales 15,764	1,044
Received at Savannah (gross).....	14,696	24,729
Received at Charleston.....	9,959	6,966
Received at Jacksonville.....	12,028	27,589
Received at Brunswick.....	.....	.....
Received at Norfolk.....	.....	.....
Total.....	52,447	60,328
Less exports.....	45,049	49,878
Stock March 30, 1919—		
Savannah, 6,747; Charleston, 651.....	7,398	10,450
Crop in sight at all ports to date.....	36,653	58,881

EXPORTS.

From—	To				Burned.	Totals.
	Great Britain.	Continent.	North Mills.	South Mills.		
Savannah.....	723	160	21,029	918	366	23,196
Charleston.....	182	...	8,337	1,306	...	9,825
Jacksonville.....	...	...	12,028	...	...	12,028
Brunswick.....	...	...	...	...	...	...
Norfolk.....	...	...	...	...	...	...
Total.....	905	160	41,394	2,224	366	45,049
1917-18.....	128	142	47,251	2,357	...	49,878
	1777	118	55,857	2133	1366	54,829

¹Increase. ²Decrease.

(Compiled by John Mallock & Co., Savannah, Georgia.)

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

EGYPTIAN COTTON CROP MOVEMENT.

FROM AUGUST 1, 1918, TO APRIL 16, 1919.

	1918-1919.	1917-1918.	1916-1917.
To Liverpool	183,229	155,656	185,199
Manchester	91,087	91,597	120,868
Other United Kingdom ports.....	5,537	115,784	.....
Total shipments to Great Britain...	279,853	363,037	306,067
To France	46,602	20,711	22,432
Spain	10,290	4,684	10,221
Italy	32,207	22,651	26,959
Switzerland	20,379	3,350	17,739
Russia .....	.....	.....	22,261
Greece	3,963	550	65
Total shipments to Continent.....	113,441	51,946	99,677
To India.....	11,517	12,464	9,205
To United States.....	45,954	38,763	105,215
Total shipments to all parts.....	450,765	466,210	520,164
Total crop (Interior gross weight), cantars ¹	.....	6,315,841	5,126,199

¹A cantar equals 98 pounds.

(Compica by Davies, Benachi & Co.)

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK.

THE MARKETS for the base metals, pig lead, and spelter, have been marked by little change except a slight tendency to advance toward the close.

The demand for rubber chemicals and ingredients has improved since last month and the price situation is about the same, with the exception of a lower tendency noted in certain materials.

ANILINE. There has been a good demand the entire month with the price steady, between 21 and 22 cents per pound.

BARYTES. The demand has steadily increased and has become fairly active. The price remains steady at \$21.50 per ton.

BENZOL. This material is gaining in use as a motor fuel, which tends materially to increase the demand and stiffen the price, which remains firm at from 22 to 27 cents per gallon.

CARBON TETRACHLORIDE. The demand has continued weak during the month, with prices unchanged.

GILSONITE. This is sold at higher prices than those prevailing before the heavily increased freight rates went into effect, but there is this advantage that shipments can now come forward all rail at the same rate as applies for rail and water, insuring quicker deliveries and arrivals in better condition.

LITHARGE. There has been a fair demand, and the price steady at 10½ cents per pound.

LITHOPONE. The demand has been particularly active the entire month, following the reduction of the price to 6½ cents per pound. Early in the month 144 tons which had been held by the United States Navy was marketed at auction. Manufacturers are said to be working to capacity to meet the growing demand.

WAXES. These are higher. All importations are taken up quickly by the trade. Carnauba waxes were quoted two weeks ago at about 4 cents per pound below the primary market prices, but the market is gradually working up to a parity, prices having advanced an average of 6 to 7 cents per pound within the last month. There is a heavy demand for montan wax, with no stock available, and there will be no stock until trading with Germany is opened up.

WHITE LEAD. There is a very steady call for white lead. The price remains fixed and is not expected to change before November 30.

WHITING. The market for whitening holds steady. Receipts of foreign supplies are influencing lower prices.

ZINC OXIDE. American-made zinc oxides are said to equal in quality the best grades of foreign manufacture. This condition bids fair for a good American export trade in this product. The domestic demand continues to be very active.

The New Jersey Zinc Co. has abolished the usual quarterly price schedule. This indicates that contracts will be made with the trade for a longer period than formerly, and should have a beneficial effect on the market for all lead products.

NEW YORK QUOTATIONS.

JUNE 25, 1919.

Prices subject to change without notice.

ACCELERATORS, ORGANIC.

Accelerator N. C.....	lb.	.50	@
Accelerene	lb.	3.70	@
Accelamal	lb.	.55	@
Aldehyde ammonia crystals.....	lb.	1.00	@ 1.25
Aniline oil	lb.	.22	@ .24
Excelsior	lb.	*.85	@
Hexamethylene tetramine (powdered).....	lb.	.95	@ 1.10
Paraphenylenediamine	lb.	3.50	@
Tensolite	lb.	*.50	@
Thiocarbamide	lb.	.50	@ .60
Velocite	lb.	*.60	@

ACCELERATORS, INORGANIC.

Lead, dry red (bbls.).....	lb.	.10½	@
sublimed blue (bbls.).....	lb.	.08½	@
sublimed white (bbls.).....	lb.	.08½	@
white, basic carbonate (bbls.).....	lb.	.09	@
Lime, flour	lb.	*.27	@
Litharge, domestic	lb.	.09½	@
imported	lb.	.14	@ .15
sublimed	lb.	.09½	@
Magnesium, carbonate	lb.	.11½	@
calcined heavy (Thistle).....	lb.	.11	@
light (Manhattan)	lb.	.35	@
Magnesium oxide	lb.	.24	@
Magnesite	lb.	.04	@

ACIDS.

Acetic, 28 per cent (bbls.).....	cwt.	2.75	@ 3.00
glacial, 99 per cent (carboys).....	cwt.	12.00	@ 12.44
Cresylic (97% straw color).....	gal.	.90	@
(95% dark)	gal.	.85	@
Muriatic, 20 degrees.....	cwt.	1.20	@ 1.40
Nitric, 36 degrees.....	cwt.	6.00	@ 6.50
Sulphuric, 66 degrees.....	ton	16.00	@ 20.00

ALKALIES.

Caustic soda, 76 per cent (bbls.).....	lb.	.04½	@
Soda ash (bbls.).....	lb.	.03½	@

COLORS.

Black:			
Bone, powdered	lb.	.05	@
granulated	lb.	.09	@
Carbon, black (sacks, factory).....	lb.	.09	@ .18
Drop	lb.	.05½	@ .15
Ivory black	lb.	.16	@ .30
Lampblack	lb.	.13	@ .25
Oil soluble aniline.....	lb.	.40	@
Rubber black	lb.	.07	@
Blue:			
Cobalt	lb.	.25	@ .30
Prussian	lb.	.60	@ .70
Ultramarine	lb.	.18	@ .40

Brown:

Iron oxide	lb.	.04	@
Sienna, Italian, raw and burnt.....	lb.	.07	@ .15
Spanish	lb.	24.00	@
Umber, Turkey, raw and burnt.....	lb.	.05	@ .06½
Vandyke	lb.	.02½	@ .03½

Green:

Chrome, light	lb.	.35	@ .40
medium	lb.	.40	@ .50
dark	lb.	.50	@ .60
commercial	lb.	.08	@ .15
Oxide of chromium (casks).....	lb.	.75	@

Red:

Antimony, crimson, sulphuret of (casks).....	lb.	.48	@
crimson, "Mephisto" (casks).....	lb.	*.55	@
Antimony, golden sulphuret of (casks).....	lb.	.25	@
golden, "Mephisto" (casks).....	lb.	*.28	@
golden sulphuret (States).....	lb.	.24	@ .25
red sulphuret (States).....	lb.	.25	@
vermillion sulphuret	lb.	.50	@
Arsenic, red sulphide.....	lb.	.25	@
Indian, pure bright.....	lb.	.14	@ .16
Toluidine toner	lb.	3.50	@
Iron oxide, reduced grades.....	lb.	.14	@
pure bright	lb.	.16	@
Oil soluble aniline, red.....	lb.	1.80	@
orange	lb.	1.25	@
Oximony	lb.	.18	@
Venetian	lb.	.03½	@
Vermilion, English, pale, medium, dark.....	lb.	1.45	@
artificial	lb.	.35	@

White:

Aluminum bronze, C. P.....	lb.	.58	@
superior	lb.	.55	@
Lithopone, domestic	lb.	.06½	@ .06¾
Ponolith (carloads, factory).....	lb.	.06½	@ .06¾
Rubber-makers' white	lb.	.06½	@ .06¾

White:

Zinc oxide, Horsehead (less carload, factory):			
"XX red"	lb.	.09 @	.09%
"Special"	lb.	.09½ @	.09%
French process, red seal	lb.	.09½ @	.09%
green seal	lb.	.10½ @	.10%
white seal	lb.	.11½ @	.11%
(States)	lb.	.09 @	
Azo, ZZZ, lead free (less carload factory)	lb.	.09 @	.09%
ZZ, under 5% leaded (less carload factory)	lb.	.08½ @	.08%
Z, 8-10% leaded (less carload factory)	lb.	.08 @	.08%
Zinc sulphide	lb.	*.06½ @	.06%
Yellow:			
Cadmium, sulphide, yellow, light, orange	lb.	2.00 @	
red	lb.	1.85 @	
Chrome, light and medium	lb.	.24 @	
Ochre, domestic	lb.	.02 @	.03
imported	lb.	.05 @	.06
Oil soluble aniline	lb.	1.20 @	
Zinc chromate	lb.	.45 @	

COMPOUNDING INGREDIENTS.

Aluminum flake (bbls. factory)	ton	26.60 @	28.00
(sacks factory)	ton	23.75 @	25.00
Aluminum oxide	lb.	*.18 @	
Ammonia carbonate, powdered	lb.	.13½ @	.13%
Asbestine (carloads)	ton	25.00 @	
Asbestos (bags)	ton	35.00 @	
Avoilas compound	lb.	.15 @	
Barium, carbonate, precipitated	ton	55.00 @	
sulphide, precipitated	lb.	.07 @	
dust	lb.	.03½ @	
Barytes, pure white	ton	35.00 @	
off color	ton	25.00 @	
uniform floated	ton	35.00 @	
Basofor	lb.	.03½ @	
Blanc fixe	lb.	.03½ @	.04%
Bone ash	lb.	.05 @	
Chalk, precipitated, extra light	lb.	.05 @	.05%
precipitated, heavy	lb.	.04 @	.04%
China clay, domestic	ton	8.50 @	20.00
imported	ton	19.00 @	23.50
Cork flour	lb.	.53 @	
Cotton linters, clean mill run, f. o. b. factory	lb.	.04½ @	
Fossil flour (powdered)	ton	60.00 @	
(bolted)	ton	65.00 @	
Diatomite	lb.	.03 @	
Glue, high grade	lb.	.30 @	.40
medium	lb.	.16 @	.28
low grade	lb.	.12 @	.15
Graphite, flake (400-pound bbl.)	lb.	.10 @	.25
amorphous	lb.	.04 @	.08
Ground glass FF. (bbls.)	lb.	.03 @	
Infusorial earth (powdered)	ton	60.00 @	
(bolted)	ton	65.00 @	
Mica, powdered	lb.	.05 @	.05%
Pumice stone, powdered (bbl.)	lb.	.05 @	.08
Rotten stone, powdered	lb.	.02½ @	.04%
Rub-R-Glu	lb.	*.20 @	.25
Shawnee clay	ton	15.00 @	
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered, domestic	ton	20.00 @	50.00
Starch, powdered corn (carload, bbls.)	cwt.	5.99 @	
(carload, bags)	cwt.	5.77 @	
Talc, American	ton	20.00 @	40.00
Tripoli earth, air-floated	ton	25.00 @	
Tyre-lith	ton	80.00 @	
Whiting, Alba (carloads)	cwt.	.80 @	.90
Columbia	cwt.	.80 @	
commercial	cwt.	1.20 @	1.25
English cliffstone	cwt.	1.75 @	2.00
gilders	cwt.	1.30 @	1.35
Paris, white, American	cwt.	1.50 @	1.60
Quaker	cwt.	.70 @	.80
Wood pulp, imported	lb.	.03½ @	
Wood flour, American	lb.	.01¾ @	

MINERAL RUBBER.

Gilsonite	ton	47.50 @	
Genasco (carloads factory)	ton	55.00 @	
(less carloads factory)	ton	57.00 @	
Hard hydrocarbon	ton	30.00 @	
K-X	ton	100.00 @	

MINERAL RUBBER:

K. M. R.	ton	50.00 @	
M. R.	ton	*65.00 @	
M. R. X.	ton	100.00 @	
Pioneer, carload, factory	ton	50.00 @	
less carload, factory	ton	55.00 @	
Raven M. R.	ton	.50 @	.70
Refined Elaterite	ton	175.00 @	
Richmond	ton	77.00 @	
No. 64	ton	45.00 @	
318/320 M. P. hydrocarbon	ton	50.00 @	55.00
Robertson M. R. Special (carloads, factory)	ton	80.00 @	
M. R. (carloads, factory)	ton	55.00 @	
M. R. (less carloads, factory)	ton	60.00 @	
Rubpron (carloads, factory)	ton	50.00 @	
(less car, factory)	ton	60.00 @	
Walpole rubber flux (factory)	lb.	.05 @	

OILS.

Castor, No. 1, U. S. P.	lb.	.25 @	
No. 2, U. S. P.	lb.	.23 @	
No. 3, U. S. P.	lb.	.20 @	
Corn, refined Argo	cwt.	25.06 @	
Cotton	lb.	.24 @	
Glycerine (98 per cent)	lb.	.20½ @	
Glycerole	lb.	.55 @	
Linseed, raw (carloads)	gal.	1.87 @	
Linseed compound	gal.	*.85 @	
Palm (Niger)	lb.	.15½ @	
Peanut	lb.	.27½ @	
Petrolatum	lb.	.06½ @	
Petroleum grease	lb.	.03¾ @	
Pine, steam distilled	gal.	.76 @	
Rapeseed, refined	gal.	1.50 @	
blown	gal.	1.60 @	
Rosin	gal.	.76 @	
Soya bean	lb.	.19 @	
Tar	gal.	.35 @	.38

RESINS AND PITCHES.

Castella gum	lb.	.60 @	
Tar, retort	gal.	.28 @	
kiln	bbl.	13.00 @	
Pitch, Burgundy	lb.	*.07½ @	
coal tar	lb.	.02½ @	
pine tar	lb.	.03¾ @	
ponto	lb.	*.14 @	
Resin, Pontianak, refined	lb.	None	
granulated	lb.	None	
fused	lb.	None	
Rosin, K.	bbl.	17.50 @	
powdered	lb.	.17 @	
Shellac, fine orange	lb.	1.60 @	

SOLVENTS.

Acetone (98.99 per cent drums)	lb.	.14 @	
methyl (drums)	gal.	1.10 @	
Benzol, water white	gal.	.23 @	.24
Beta-naphthol, resublimed	lb.	.95 @	
ordinary grade	lb.	.45 @	
Carbon bisulphide (drums)	lb.	.06 @	.06½
tetrachloride (drums)	lb.	.12 @	
Naphtha, motor gasoline (steel bbls.)	gal.	.24½ @	
73 @ 76 degrees (steel bbls.)	gal.	None	
68 @ 70 degrees (steel bbls.)	gal.	None	
Solvent	gal.	.20 @	
V. M. & P. (steel bbls.)	gal.	.23½ @	
Toluol, pure	gal.	.24 @	.25
Turpentine, spirits	gal.	1.10 @	
wood	gal.	.92 @	1.02
Osmaco reducer	gal.	.30 @	
Xylol, pure	gal.	.35 @	.40
commercial	gal.	.30 @	.35

SUBSTITUTES.

Black	lb.	.10 @	.18
White	lb.	.12 @	.23
Brown	lb.	.15 @	.23
Brown factice	lb.	.09 @	.21
White factice	lb.	.10 @	.23
Paragol	cwt.	19.08 @	
hard	cwt.	18.58 @	

VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.33 @	.39
Orange mineral, domestic	lb.	.13½ @	
Sulphur chloride (drums)	lb.	.06½ @	.06%
Sulphur, flour, Brooklyn brand (carloads)	cwt.	2.95 @	
pure soft (carloads)	cwt.	2.90 @	
superfine (carloads, factory)	cwt.	2.50 @	

(See also Colors—Antimony)

WAXES.

Wax, beeswax, white	lb.	.68 @	.78
ceresin, white	lb.	.16½ @	.17
carnauba	lb.	.56 @	.93
ozokerite, black	lb.	.60 @	
montan green	lb.	.80 @	
substitute	lb.	.35 @	
paraffine, refined 118/120 m. p. (cases)	lb.	.20 @	.30
123/125 m. p. (cases)	lb.	.08½ @	
128/130 m. p. (cases)	lb.	.09½ @	

*Nominal.



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